



Maharaja Ranjit Singh Punjab Technical University

Dabwali Road, Bathinda -151001

(Estb. by Govt. of Punjab vide Act No. 5 [2015] and u/s 2(f) and 12 B of UGC Act, 1956)

ਮਹਾਰਾਜਾ ਰਣਜੀਤ ਸਿੰਘ ਪੰਜਾਬ ਟੈਕਨੀਕਲ ਯੂਨੀਵਰਸਿਟੀ, ਡਾਬਵਾਲੀ ਰੋਡ, ਬਠਿੰਡਾ।

Ref No : 1597

Dated 22/06/21

(By E-mail)

To

Respected Members

Academic Council,
Maharaja Ranjit Singh Punjab
Technical University, Bathinda.

Sub:- Approved Minutes of 4th meeting of Academic Council of Maharaja Ranjit Singh Punjab Technical University, Bathinda held on 10-06-2021

Greetings from the Univesity

Please find enclosed herewith a copy of approved minutes of 4th Meeting of Academic Council of the University, held on 10-06-2021 at 11:00 A.M via video conference for your kind information and record please.

**Registrar-cum-
Secretary, Academic Council**

Copy to

1. Hon'ble Vice Chancellor-cum-Chairman, Academic Council, MRSPTU, Bathinda.
2. Office of Dean Academic Affairs, MRSPTU, Bathinda: For necessary action to be taken on the decisions taken in this meeting.
3. Prof. Incharge (Finance & Purchase), MRSPTU, Bathinda.
4. IT Enabled Services Centre, MRSPTU, Bathinda

Minutes of 4th Meeting of Academic Council, MRSPTU, Bathinda.

The 4th Meeting of Academic Council of Maharaja Ranjit Singh Punjab Technical University, Bathinda was held on 10-06-2021 at 11:00 A.M via video conference. The following members were present in the meeting.

- | | |
|--|----------|
| 1. Prof. Buta Singh Sidhu,
Vice-Chancellor, MRSPTU, Bathinda, | Chairman |
| 2. Dean Academic Affairs,
MRSPTU, Bathinda | Member |
| 3. Dean R & D,
MRSPTU, Bathinda | Member |
| 4. Dr. O.P. Panday, Dean Faculty of Sciences
Sr. Professor & Head, School of Physics and Material Science,
Thapar Institute of Engineering & Technology, Patiala | Member |
| 5. Dr. Maninder Singh,
Professor & Head, Department of CSE
Thapar Institute of Engineering & Technology, Patiala | Member |
| For: Dr. Sunder Singh, Dean Faculty of Engineering & Tech
Former Professor, Thapar Institute of Engineering & Technology, Patiala. | Member |
| 6. Dr. Inder Pal Singh, Dean Faculty of Pharmacy
Professor, Natural Products Chemistry, NIPER, Mohali. | Member |
| 7. Dr. Rajnit Kohli, Dean Faculty of Hospitality and Tourism Management
Principal, Institute of Engineering & Technology, Bathinda. | Member |
| 8. Dr. Sehijpal Singh,
Director,
Guru Nanak Dev Engineering College, Ludhiana. | Member |
| 9. Campus Director,
GianiZail Singh Campus College of Engineering & Technology, Bathinda | Member |
| 10. Director,
Punjab Institute of Technology, Nandgarh, District Bathinda | Member |
| 11. Director,
Punjab Institute of Technology, GTB Garh, District Moga | Member |
| 12. Director,
Punjab Institute of Technology, Rajpura | Member |
| 13. Director,
Punjab State Aeronautical Engg. College, Patiala | Member |
| 14. Director,
Punjab Institute of Technology, Arniwal District Fazilka | Member |
| 15. Director, College Development Council,
MRSPTU, Bathinda | Member |
| 16. Dean Students Welfare,
MRSPTU, Bathinda | Member |
| 17. Consultant (Planning & Development)
For: Dean Planning & Development,
MRSPTU, Bathinda, | Member |
| 18. Dean Consultancy & Industry Linkage,
MRSPTU, Bathinda, | Member |
| 19. Dean Distance Education Program,
MRSPTU, Bathinda, | Member |
| 20. Controller of Examinations,
MRSPTU, Bathinda | Member |

21. Head, Department of Mechanical Engineering, GZSCCET, MRSPTU, Bathinda	Member
22. Head, Department of Civil Engineering, GZSCCET, MRSPTU, Bathinda	Member
23. Head, Department of Electrical Engineering, GZSCCET, MRSPTU, Bathinda	Member
24. Head, Department of Electronics & Comm. Engineering, GZSCCET, MRSPTU, Bathinda	Member
25. Head, Department of Textile Engineering, GZSCCET, MRSPTU, Bathinda	Member
26. Head, Department of Computer Sc. & Engineering, GZSCCET, MRSPTU, Bathinda	Member
27. Head, GZS School of Planning & Architecture, MRSPTU, Bathinda	Member
28. Head, Department of Physics, MRSPTU, Bathinda	Member
29. Head, Department of Chemistry, MRSPTU, Bathinda	Member
30. Head, Department of Mathematics, MRSPTU, Bathinda	Member
31. Head, Department of Business School, MRSPTU, Bathinda	Member
32. Head, Department of Pharmaceutical Sc. & Technology, MRSPTU, Bathinda	Member
33. Head, Department of Food Sc. & Technology, MRSPTU, Bathinda	Member
34. Principal, Guru Ram Dass Institute of Engineering & Technology, 19 Km Mile Stone, Bathinda-Barnala Highway Village LehraBega, Tehsil Nathana, Distt. Bathinda.	Member
35. Principal, Cordia Institute of Hotel Management , VPO Sanghol, Tehsil Khamano, Distt. Fatehgarh Sahib.	Member
36. Prof. Incharge (Finance & Purchase) MRSPTU, Bathinda	Special Invitee
37. Dr. Munish Kumar Jindal Associate Dean, ITES, MRSPTU, Bathinda	Special Invitee
38. Dr. Gurinder Pal Singh, Registrar MRSPTU, Bathinda	Secretary

The meeting was started with the welcome note from the Chairman. Chairman has taken serious note about the holding of meeting after a long gap of more than two years. [BSS2]It was advised to conduct the Academic Council more frequently to improve the quality of academic programs and teaching/learning. The Dean Academic will also plan for the PPT presentation in each of the coming academic council meeting about the academic initiatives

taken by the university and also about the road map to improve the teaching/learning quality.

Thereafter the formal meeting was started and the following decisions were taken.

ITEM NO. 04.01. CONFIRMATION OF THE MINUTES OF 3rd MEETING OF ACADEMIC COUNCIL HELD ON 16.11.2018

Decision: Confirmed.

ITEM NO. 04.02. ACTION TAKEN REPORT OF 3RD MEETING OF THE ACADEMIC COUNCIL HELD ON 16.11.2018.

Decision: Noted.

ITEM NO. 04.03. INFORMATION ABOUT THE MINUTES OF 3RD MEETING OF STANDING COMMITTEE FOR ACADEMIC COUNCIL HELD ON 24.05.2019

Decision: Noted.

ITEM NO. 04.04. RATIFICATION THE NOTIFICATION FOR COMPLETE REGULAR Ph.D COURSE WORK ALONG WITH REGULAR JOB BY MAIN CAMPUS / GZSCCET, MRSPTU EMPLOYEES.

Decision: Ratified.

ITEM NO. 04.05. APPROVAL TO START PROVISIONAL ADMISSION PROCESS FOR SESSION 2021-22 IN MAIN CAMPUS AND CONSTITUENT COLLEGES OF MRSPTU, BATHINDA.

Decision: Approved

ITEM NO. 04.06. APPROVAL REGARDING MOU SIGNED WITH WAYNE STATE UNIVERSITY, DETROIT, MICHIGAN, USA ON 27-05-21

Decision: Approved.

The following committee is constituted to formulate guidelines for strengthening the international ties of MRSPTU and to sign MOUs with other National and International Universities:

1. Dean Academic Affairs, MRSPTU, Bathinda.
2. Prof. Incharge (Academics), GZSCCET, MRSPTU, Bathinda.
3. Prof. Incharge, Corporate Resources Centre
4. HOD, Deptt. of Computer Science Engg.

The above committee shall submit its report within two months for implementation of the same.

ITEM NO. 04.07. RATIFICATION OF THE COURSES NOTIFIED FOR THE UNIVERSITY MAIN CAMPUS AND CONSTITUENT FOR ACADEMIC SESSION 2021-22

Decision: Ratified.

ITEM NO. 04.08. TO APPROVE THE MINUTES OF 3rd MEETINGS OF UNIVERSITY RESEARCH BOARD HELD ON 31.05.2021

Decision: Approved.

ITEM NO. 04.09. TO APPROVE THE MINUTES OF 3rd/ 4th / 5th MEETINGS OF BOARD OF STUDIES IN AERONAUTICAL & AEROSPACE ENGG. HELD ON 05.05.2020, 17.12.2020, 26.03.2021.

Decision: Approved.
Further it was decided that all such matters must be sent through the respective Faculties. Further, deliberation on the request put up by the Director PSAEC vide email dated 18-12-2020, the change in the nomenclature of B.Tech Aerospace Engineering (Avionics) to B.Tech. Aerospace Engineering, duly approved by the competent authority of the University vide ref no. VC/153 dated 09-03-2021 is ratified.

ITEM NO. 04.10. TO RATIFY THE NOTIFICATION REGARDING EQUIVALENCE OF B.COM. (PROFESSIONAL) WITH B.COM. (HONS.)

Decision: Ratified.

ITEM NO. 04.11. TO RATIFY THE MINUTES OF MEETING OF BOARD OF STUDIES IN AGRICULTURE SCIENCES HELD ON 20.08.2019.

Decision: Ratified.

ITEM NO. 04.12. TO RATIFY ACADEMIC CALENDARS– 2020 NOTIFIED FROM TIME TO TIME.

Decision: Ratified.

ITEM NO. 04.13. RATIFICATION OF ADDITION/REDUCTION IN SANCTIONED INTAKE AND CLOSURE OF COURSES W.E.F. SESSION 2020-21.

Decision: Ratified.

ITEM NO. 04.14. TO RATIFY NEW PROGRAMME IN DIFFERENT DEPARTMENTS/ CONSTITUENT COLLEGES/ UNIVERSITY MAIN CAMPUS W.E.F. ACADEMIC SESSION 2020-21 ONWARDS.

Decision: Ratified
In view of the current scenario, it was decided to constitute a committee to make complete academic and financial review of all the Departments/Constituent Colleges of the University to give the recommendation to make all the department/constituent self-sustainable: -

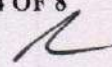
1. Dean Academic Affairs, MRSPTU, Bathinda.
2. Prof. Incharge (Finance), MRSPTU, Bathinda.
3. HOD of the concerned department/Director of Constituent College
4. AR or DR Academic as Convener

ITEM NO. 04.15. RATIFICATION OF THE START OF NEW PROGRAMME IN AFFILIATED COLLEGES W.E.F. ACADEMIC SESSION 2020-21 ONWARDS.

Decision: Ratified.

ITEM NO. 04.16. TO START BCA-MCA DUAL DEGREE LEET IN UNIVERSITY MAIN CAMPUS W.E.F. ACADEMIC SESSION 2019-20 ONWARDS.

Decision: Ratified.



ITEM NO. 04.17. TO RATIFY THE AMENDMENT IN THE CHOICE BASED CREDIT SYSTEM - 2016.

Decision: Ratified.

ITEM NO. 04.18. TO INFORM REGARDING SHIFTING OF B.TECH. (EEE) STUDENTS FROM KINGS GROUPS OF INSTITUTES TO GZSCCET, BATHINDA.

Decision: Noted.

ITEM NO. 04.19. TO RATIFY ADDITION OF SUPERNUMERARY SEATS IN B.PHARMACY LATERAL ENTRY AND TUITION FEE WAIVER AS PER PCI NOTIFICATION Ref. No. 14-48/2012-PCI/4473 dt. 30.09.2020.

Decision: Ratified.

ITEM NO. 04.20. TO RATIFY UNDER-GRADUATE & POST-GRADUATE SCHEME AND SYLLABI

Decision: Ratified.

ITEM NO. 04.21 TO INFORM MRSPTU REGULATIONS FOR MINOR ENGINEERING WITH UG DEGREE IN ENGINEERING – 2020

Decision: Noted, as informed by the Dean Academic Affairs the matter has been already approved by BOG

ITEM NO. 04.22 TO INFORM MRSPTU REGULATIONS FOR B.TECH. HONORS– 2020

Decision: Noted.

ITEM NO. 04.23 TO RATIFY OF THE COURSE CODES OF THE VARIOUS COURSES OFFERED BY MRSPTU

Decision: Noted.

ITEM NO. 04.24 TO INFORM ABOUT ADMISSIONS 2019-20 SESSION.

Decision: Noted.

ITEM NO. 04.25 TO INFORM ABOUT ADMISSIONS 2020-21 SESSION.

Decision: Noted.

ITEM NO. 04.26 TO DISCUSS REGARDING CONVERSION OF BMS(HMCT) 3-YRS NON-AICTE COURSE TO BMS(HMCT) 4-YRS COURSE AS REQUESTED BY SVCMT, NEAR BANUR

Decision: It was decided that the BMS(HMCT) course of 3-year duration, be continued as per existing scheme. Further, it may be intimated to the institute that in case it is interested in 4-year course, it may apply to AICTE, as AICTE is offering a 4 Year course having nomenclature BHMCT.

ITEM NO. 04.27 TO RATIFY ABOUT PG THESIS AND ATTENDANCE RELATED GUIDELINES DURING COVID-19

Decision: Ratified.

ITEM NO. 04.28 TO RATIFY THE GUIDELINES REGARDING GRADING OF STUDENTS OF INTERMEDIATE SEMESTERS IN THEORY SUBJECTS IN VIEW OF COVID-19 PANDEMICS

Decision: Ratified.

ITEM NO. 04.29 TO APPROVE THE ESTABLISHMENT OF IELTS CENTRE (PREPARE FOR SUCCESS) FOR THE SUCCESS OF GRADUATE STUDENTS OF BCA & B-TECH.

Decision: Approved. The IELTS Centre is attached to Corporate Resource Centre (CRC), MRSPTU, Bathinda, CRC to develop complete guidelines and Fees Structure accordingly, and get it approved prior to its implementation.

ITEM NO. 04.30 TO RATIFY THE ELIGIBILITY FOR ADMISSION IN VARIOUS COURSES

Decision: Ratified.

ITEM NO. 04.31 DECISION ON A REQUEST TO RESTORE SIX MONTH INDUSTRIAL TRAINING FOR B. TECH 2017 BATCH

Decision: Deferred, such issues will be considered after the recommendation through BOS.

ITEM NO. 04.32 TO RATIFY LATERAL ENTRY ADMISSIONS FOR NON-AICTE/UGC COURSES

Decision: Ratified.

ITEM NO. 04.33 APPROVAL TO START LATERAL ENTRY ADMISSIONS TO NEWLY STARTED COURSES IN DOLPHIN PG COLLEGE FOR 2021-22 SESSION.

Decision: Approved.

ITEM NO. 04.34 TO ALLOW CREDIT TRANSFER TO STUDENTS TO THE EXTENT OF 20% IN EVERY SEMESTER FOR ONLINE COURSES PROVIDED THROUGH SWAYAM MOOCS PLATFORM-REGARDING

Decision: Approved in principle. Dean Academic Affairs shall prepare the complete guidelines and regulations in the light of notification of UGC/AICTE and submit for its formal approval.

ITEM NO. 04.35 TO RATIFY THE CHANGE IN NOMENCLATURE FROM B.TECH. AEROSPACE ENGINEERING (AVIONICS) TO B.TECH. AEROSPACE ENGINEERING.

Decision: Ratified. As in the view of discussion only two courses i.e.- B.Tech (Aeronautical Engineering) and B.Tech (Aerospace Engineering) are approved from 17.12.2020 as there are no students admitted and there is no scope of Avionics.

ITEM NO. 04.36 INCORPORATION OF “UNIVERSAL HUMAN VALUES 2: UNDERSTANDING HARMONY” AS A MANDATORY COURSE FOR ALL UNDERGRADUATE STUDENTS FROM ACADEMIC YEAR 2020-21.

Decision: Approved in principle. The course be incorporated in curriculum by Board of Studies as per the directions of AICTE.

ITEM NO. 04.37 TO RATIFY THE MINUTES OF MEETING REGARDING EXAMINATION RELATED ISSUES DUE TO COVID 19.

Decision: Ratified.

ITEM NO. 04.38 TO APPROVE THE NOTICES/ CIRCULARS / OFFICE ORDERS ISSUED REGARDING THE VARIOUS ISSUES OF ACADEMIC / EXAMINATION / ADMISSION ARISING OUT DUE TO COVID-19 SITUATION FROM TIME TO TIME FOR THE MAIN CAMPUS/ CONSTITUENT/ PITS/ AFFILIATED COLLEGES OF MRSPTU, & DEAN (ACADEMIC) MRSPTU AS NODAL OFFICER, COVID ACADEMIC MANAGEMENT OF THE UNIVERSITY

Decision: Noted.

ITEM NO. 04.39 TO APPROVE THE MINUTES OF 3rd MEETING OF FACULTY OF ENGG. & TECHNOLOGY HELD ON 29.09.2020

Decision: Approved

ITEM NO. 04.40 TO APPROVE THE MINUTES OF 3rd MEETING OF FACULTY OF SCIENCES HELD ON 09.10.20

Decision: Approved.

ITEM NO. 04.41 TO APPROVE THE MINUTES OF 2nd MEETING OF FACULTY OF COMMERCE & MANAGEMENT HELD ON 11.09.20

Decision: Approved.

ITEM NO. 04.42 OTHER ITEMS

- i. A proposal has been received from Director CDC dated 07.01.2021 through Registrar MRSPTU, regarding a certificate may be awarded upon exit after the completion of the 1st year in a specific course. Likewise, a student may be awarded a diploma upon exit after 2nd year and after the 3rd year degree is awarded.

Decision: Dean Academic Affairs shall prepare complete proposal through the respective departments keeping in view the New Education Policy. Further the B.Voc. courses may also be implemented by making a completed proposal with the mapping of curriculum to make certification at different levels.

- ii. A request has been received from PSAEC, Patiala vide no. PSAEC/942 dated 01.03.2021 regarding option of conducting of BBA (Aviation Management) and BMS (Airlines, Tourism & Hospitality) semester examination in Punjabi along with English .

Decision: Deferred. May be put up again through the Dean Academic Affairs, by discussing all the modalities in this regard.

- iii. As per the request received from Baba Banda Singh Bahadur Engineering College, Fatehgarh Sahib vide no. BBSBEC/Admn/1190 dated 13.01.2021, regarding change in nomenclature of B.Tech. (Agriculture Engineering) to B.Tech. (Agricultural Engineering) that is being followed by Punjab Agricultural University (PAU), Ludhiana and Indian Council of Agricultural Research (ICAR), New Delhi.

Decision: Approved.
The following committee will work the modalities about the pass out and existing students:

1. Dean Academic Affairs, MRSPTU, Bathinda.
2. Director, College Development Council, MRSPTU, Bathinda.
3. Chairperson BOS.
4. Controller of Examination, MRSPTU, Bathinda.

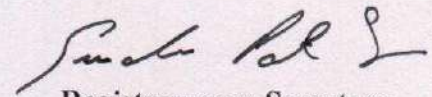
- iv. To deliberate admitting a candidate in B.Tech. LEET who has already completed his/her B.Tech. degree of other stream as per the requests received from the Affiliated Colleges of MRSPTU.

Decision: Approved.
The credit transfer of such students shall be made in view of the applicable regulations of MRSPTU/UGC/AICTE etc.

- v. In reference to AICTE circular vide no. AICTE/P&AP/NCC-GE/Circular/2021/ dt. 26.04.2021 and request received from incharge NCC Wing to deliberate Incorporation of "NCC as one of the 'Open Elective Credit Course' for various programs running under MRSPTU Bathinda (ANNEXURE-LIII).

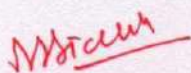
Decision: Approved.
Incharge - NCC shall co-ordinate with Dean Academic Affairs, MRSPTU to propose the syllabus of the above subject of 03 credits to be included as elective subject.

The meeting ended with thanks to the Chair.



Registrar-cum-Secretary
Academic Council
Maharaja Ranjit Singh
Punjab Technical University, Bathinda

Submitted for approval please.



Hon'ble Vice Chancellor-cum-Chairman
Academic Council,
Maharaja Ranjit Singh Punjab Technical University, Bathinda



MRSPTU
Bathinda

Annexure - II

Dean Academic Affairs MRSPTU <daa@mrsptu.ac.in>

Request for updating the curriculum of Bachelor of Management studies (Hotel Management & Catering Technology)

Dean Academic Affairs MRSPTU <daa@mrsptu.ac.in>
To: SVGOI Banur <directorplaning@gmail.com>

Tue, Aug 24, 2021 at 2:50 PM

Sir/Mam,

In reference to your email received regarding the subject **'Request for updating the curriculum of Bachelor of Management studies (Hotel Management & Catering Technology)'**, it is to intimate you that the matter was put up in Academic Council vide Agenda Item no. 4.26 and it was decided that the BMS(HMCT) course of 3-year duration be continued as per existing scheme. Further, if in case, the institute is interested in 4-year course, it may apply to AICTE, as AICTE is offering a 4-year course having nomenclature BHMCT (Refer MoM of 4th Academic Council Meeting on university website).

[Quoted text hidden]

DEAN ACADEMIC AFFAIRS, MRSPTU-Bathinda



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ਡੱਬਵਾਲੀ ਰੋਡ, ਬਠਿੰਡਾ - 151001

Maharaja Ranjit Singh Punjab Technical University

DABWALI ROAD, BATHINDA-151001

[A State University Estb. by Govt. of Punjab Act No. 5(2015) u/s 2(f) & Approved u/s 12B of UGC Act, 1956]

ਡੀਨ (ਅਕਾਦਮਿਕ ਮਾਮਲੇ)

DEAN (Academic Affairs)

Ref. No.: DAA/MRSPTU/Notifications/ 116

Date: 15.09.2021

NOTIFICATION

Sub.: Implementation of UHV-1 and UHV-2 Courses for BTech 2K21 Batch onwards.

1. As per the decision taken in the 4th meeting of Academic Council, and subsequent approval given for its implementation in the 4th Faculty of Engineering & Technology meeting, a non-credit course UHV-1 (Universal Human Values-I) shall be taught to all BTech first year students from 2021 Batch onwards during the 21-days mandatory Student Induction Programme (SIP), along with the other modules of SIP, as per the following details-

Subject Code	Name	Contact Hours	Marks	Credits
BMNCC0-010	UHV-1	22 Hrs. (to be completed during 21-days SIP)*	Satisfactory/Not Satisfactory	0

*As per AICTE SIP Manual Hour Plan available at <https://fdp-si.aicte-india.org>

2. A subject "Universal Human Values 2 – Understanding Harmony (BHSMC0-0026)" shall be taught in 3rd/4th semester to all BTech students from 2021 Batch onwards as detailed below-

Subject Code	Name	Contact Hrs.			Credits
BHSMC0-026	Universal Human Values 2 – Understanding Harmony	L	T	P	3
		2	1	0	

3. The non-credit course titled "Human Values and Professional Ethics (BHUMA0-103)" that was taught upto 2K20 Batch in 1st / 2nd Sem to all BTech students is hereby dispensed with from 2021 Batch onwards.

4. This 3 credit course shall be over and above the total credits assigned to a particular programme.


DEAN ACADEMIC AFFAIRS

This is for the information and further necessary action by all concerned:

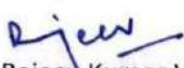
1. PA to Vice Chancellor, MRSPTU, Bathinda for information to the Vice Chancellor please
2. Registrar, MRSPTU, Bathinda
3. Member Secretary, Faculty of Engg. & Technology, MRSPTU, Bathinda
4. Controller of Examinations, MRSPTU, Bathinda
5. Co-ordinator, SIP-cum-UHV Cell, MRSPTU, Bathinda
6. Director, IT Enabled Services, MRSPTU, Bathinda for uploading this notification on website
7. All Principals/Directors/GZSCCET/PITs/PSAEC, Patiala and all Affiliated Colleges of MRSPTU, Bathinda



Course Plan of UHV-1 as suggested in SIP handbook issued by AICTE

Session No.	Topic Title	Aspirations and Issues	Basic Realities (underlying harmony)
1	Welcome and Introductions	Getting to know each other	Self-exploration
2 and 3	Aspirations and Concerns	Individual academic, career... Expectations of family, peers, society, nation... Fixing one's goals	Basic human aspirations Need for a holistic perspective Role of UHV
4 and 5	Self-Management	Self-confidence, peer pressure, time management, anger, stress... Personality development, self-improvement...	Harmony in the human being
6 and 7	Health	Health issues, healthy diet, healthy lifestyle Hostel life	Harmony of the Self and Body Mental and physical health
8, 9, 10 and 11	Relationships	Home sickness, gratitude towards parents, teachers and others Ragging and interaction Competition and cooperation Peer pressure	Harmony in relationship Feelings of trust, respect... gratitude, glory, love
12	Society	Participation in society	Harmony in the society
13	Natural Environment	Participation in nature	Harmony in nature/existence
14	Sum Up	Review role of education Need for a holistic perspective	Information about UHV-II course, mentor and buddy
15	Self-evaluation and Closure	Sharing and feedback	

Note: Total Hours allotted : 22 hrs


Dr. Rajeev Kumar Varshney
Coordinator
SIP-cum-UHV cell,
MRSPTU, Bathinda



Teaching Scheme for delivering UHV-1

Subject Code	Name	Contact Hours	Marks	Credits
	UHV-1	*To be completed during 21 days of SIP	Satisfactory/Not Satisfactory	0

*As per AICTE SIP Manual Hour Plan available at

<https://fdp-si.aicte-india.org/download/G012%20SIP%20Hand%20Book%20v2.pdf>

Rajeev

Dr. Rajeev Kumar Varshney
Coordinator
SIP-cum-UHV cell,
MRSPTU, Bathinda

UNIVERSAL HUMAN VALUES 2: UNDERSTANDING HARMONY

Subject Code: BHSMC0-026

L T P C
2 1 0 3

Duration: 45Hrs

Course Objectives

This course is intended to provide a much needed orientational input in value education to the young enquiring minds.

Course Outcomes

1. To help the students appreciate the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirations of all human beings.
2. To facilitate the development of a Holistic perspective among students towards life and profession as well as towards happiness and prosperity based on a correct understanding of the Human reality and the rest of existence. Such a holistic perspective forms the basis of Universal Human Values and movement towards value-based living in a natural way.
3. To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually fulfilling human behavior and mutually enriching interaction with Nature.

UNIT I (09 Hrs.)

Introduction to Value Education Lecture: Understanding Value Education, Self-exploration as the Process for Value Education, Continuous Happiness and Prosperity – the Basic Human Aspirations, Right Understanding, Relationship and Physical Facility, Happiness and Prosperity – Current Scenario, Method to Fulfill the Basic Human Aspirations

UNIT II (12 Hrs.)

Harmony in the Human Being : Understanding Human being as the Co-existence of the Self and the Body Lecture 8: Distinguishing between the Needs of the Self and the Body, The Body as an Instrument of the Self, Understanding Harmony in the Self, Harmony of the Self with the Body, Programme to ensure self-regulation and Health

UNIT III (09 Hrs.)

Harmony in the Family and Society : Harmony in the Family – the Basic Unit of Human Interaction, Values in Human-to-Human Relationship, 'Trust' – the Foundational Value in Relationship, 'Respect' – as the Right Evaluation, Exploring the Feeling of Respect, Understanding Harmony in the Society, Vision for the Universal Human Order

UNIT IV (15 Hrs.)

Harmony in the Nature/Existence: Understanding Harmony in the Nature, Interconnectedness, self-regulation and Mutual Fulfilment among the Four Orders of Nature, Realizing Existence as Co-existence at All Levels, The Holistic Perception of Harmony in Existence

Implications of the Holistic Understanding – a Look at Professional Ethics: Natural Acceptance of Human Values, Definitiveness of (Ethical) Human Conduct, A Basis for Humanistic Education, Humanistic Constitution and Universal Human Order, Competence in

MAHARAJA RANJIT SINGH PUNJAB TECHNICAL UNIVERSITY, BATHINDA

Professional Ethics, Holistic Technologies, Production Systems and Management Models- Typical Case Studies, Strategies for Transition towards Value-based Life and Profession

Suggested Readings:

Text Book and Teachers Manual

- a. The Textbook A Foundation Course in Human Values and Professional Ethics, R R Gaur, R Asthana, G P Bagaria, 2nd Revised Edition, Excel Books, New Delhi, 2019. ISBN 978-93-87034-47-1
- b. The Teacher's Manual Teachers' Manual for A Foundation Course in Human Values and Professional Ethics, R R Gaur, R Asthana, G P Bagaria, 2nd Revised Edition, Excel Books, New Delhi, 2019. ISBN 978- 93-87034-53-2 3.2

Recommended Books

1. Jeevan Vidya: Ek Parichaya, A Nagaraj, Jeevan Vidya Prakashan, Amarkantak, 1999.
2. Human Values, A.N. Tripathi, New Age Intl. Publishers, New Delhi, 2004.
3. The Story of Stuff(Book).
4. The Story of My Experiments with Truth - by Mohandas KaramchandGandhi
5. Small is Beautiful - E. F Schumacher.
6. Slow is Beautiful - Cecile Andrews
7. Economy of Permanence - J CKumarappa
8. Bharat Mein Angreji Raj - PanditSunderlal
9. Rediscovering India - by Dharampal
10. Hind Swaraj or Indian Home Rule - by Mohandas K. Gandhi
11. India Wins Freedom - Maulana Abdul Kalam Azad
12. Vivekananda - Romain Rolland (English)
13. Gandhi - Romain Rolland (English)



MRSPTU/CRC/1018

Dated: 14/10/2021

To
Dean Academic Affairs
MRSPTU, Bathinda

Subject: Regarding starting of online courses approved by board of studies of respective departments

Respected Madam,

In view of precarious conditions of University, online courses may be helpful to generate some funds. As proposed by some of the departments and approved by respective Board of Studies, these courses are of short duration and do not need any approval from UGC/AICTE.

It is proposed to start online courses in the University to enhance employment skills of the students, to generate revenue for the University and to cater to the needs of students with the optimum utilization of available resources of the University.

However, to start these courses with augmented learning, some of the established online platform is required. That platform shall be provided by some organization and may be on revenue sharing basis so that the payment will be made out of the generated revenue only.

The list of courses, course objectives, course outcomes, course contents, eligibility criteria to attend course and the duration of the courses is attached.

Submitted for your approval please and to be approved from Academic Council.

Regards

Prof Rajesh Gupta
Professor Incharge, CRC

CC: to Registrar, MRSPTU, Bathinda for information please

Enclosed: The proposed online courses with course objectives, course outcomes, course contents, eligibility criteria to attend course and the duration of the courses.

SKILL DEVELOPMENT COURSES

**To be conducted in
Online or Offline mode
at
MRSPTU, Bathinda**

LIST OF PROPOSED ONLINE COURSES

Sr no	Course Name	Department	Duration (Hours)	Duration (Months/ Weeks)	Eligibility criteria	Proposed fee
1	Computer Proficiency and Office Automation	Computer Science and Engineering/Computational Sciences	120	6 month/ 24 weeks	Graduate/ Graduating/ 12 th pass	6000
2	Creating Application for Beginners	Computer Science and Engineering/Computational Sciences	120	6 month/ 24 weeks	Graduate/ Graduating/ 12 th pass	
3	Machine Learning	Computer Science and Engineering/Computational Sciences	120	6 month/ 24 weeks	Graduate/ Graduating/ 12 th pass	
4	Programming with Python	Computer Science and Engineering/Computational Sciences	120	6 month/ 24 weeks	Graduate/ Graduating/ 12 th pass	
5	Mobile Application Development	Computer Science and Engineering/Computational Sciences	120	6 month/ 24 weeks	Graduate/ Graduating/ 12 th pass	
6	Data Science	Computer Science and Engineering/Computational Sciences	120	6 month/ 24 weeks	Graduate/ Graduating/ 12 th pass	
7	Programming of CNC Lathe and Milling Machine	Mechanical Engineering	60	6 weeks	Graduate/ Graduating/ 12 th pass	3000
8	Computer Aided Drafting of Mechanical Components	Mechanical Engineering	60	6 weeks	Graduate/ Graduating/ 12 th pass	3000
9	Computer Aided Design (CAD)	Architecture department	100	3 months	10 th pass onwards	
10	Stock Market Trading for Business	University Business School	60	10 weeks	Graduate/ Graduating/ 12 th pass	
11	Personality Development	University Business School	60	10 weeks	Graduate/ Graduating/ 12 th pass	
12	Certificate Course in Food Safety and Quality control	Food Science and Technology	45	3 months	Graduate/ Graduating/ 12 th pass	10000
13	Certificate Course in Nutrition and Dietetics	Food Science and Technology	45	3 months	Graduate/ Graduating/ 12 th pass	10000

COMPUTER PROFICIENCY AND OFFICE AUTOMATION

Course Duration: 120 hrs

Eligibility: Graduate/ Graduating/ 12th pass

Course Objective: Basics of computers, office tools course would enable the students in crafting professional word documents, excel spread sheets, power point presentations using the Microsoft suite of office tools. To familiarize the students in preparation of documents and presentations with office automation tools. Course is beneficial for completing any professional job's requirements of computer certification.

Course Outcomes: By learning the course, the students will be able to perform documentation · to perform accounting operations · to perform presentation skills

Course Content:

UNIT1: BASICSOFCOMPUTER

UNIT2: OPERATINGSYSTEMS MS-WINDOWS

UNIT3: OFFICEAPPLICATIONS-I
MSOFFICE:MS-WORD

UNIT4: OFFICEAPPLICATIONS-II
MSOFFICE:MS-EXCEL

UNIT5: OFFICEAPPLICATIONS-III
MSOFFICE:MS-POWERPOINT

UNIT6 INTERNET&ITSAPPLICATIONS

DETAILED SYLLABUS

UNIT 1 (20 hrs)

Introduction to Computer: Definition - History & Generation of Computer (From First to 5th) - Applications of Computer – Advantages of Computer – Terms related to Computer - Characteristics of Computer: Speed, Storage, Versatility and Diligence – Hardware & Software. Block Diagram and Working Principle of Computer - Types of Computers: On the Basis of Working - Analog, Digital & Hybrid, On the Basis of Size - Main frame, Mini Computer, Super Computer, Work station, Micro Computer, Desktop Computer, Laptop Computer, Palmtop Computer; On the basis of Processor – XT, AT & Pentium (i3, i5, i7)

Memory: Units, Representation, Types - Primary memory: RAM, ROM, PROM, EPROM, EEPROM, DDR Secondary memory: Hard disk, CD, DVD, Blue ray Disc, Pen Drive Magnetic tape

CPU: Components of CPU - Mother board, Hard disk, RAM, ROM, Processor

Input, Output devices: Keyboard, Mouse, Scanner, Digital Camera, Joystick, Pen drive, Monitor, Printer, Plotter – Connecting port – Serial, parallel – USB port.

Computer Networks: Data Communications –Types of Computer Networks – Local Area Networks & Wide Area Networks.

UNIT 2 (25 hrs)

Windows:

Definition of Operating System And its Functions

Windows Desk top - GUI: Definition, Standards, Cursors/Pointers, Icons, GUI Menus, GUI-ShareData – **Desktop icons and their functions:** My computer, My documents, Recycle Bin, Quick launch tool bar, Start menu, Task bar

Dialog Boxes: List Box, Slide, Drop-down list, Radio button, Check box, Text box,

Task Bar - System Tray - Quick launch tool bar - Start button

Parts of Windows -Title bar-Menu bar - Scroll bar- Status bar, Maximize, Minimize, close and Resize & Moving a Window

Windows - Start Menu –Help Menu- Preview Menu; **Logoff & Shutdown** – Key board short keys or hotkeys.

UNIT 3 (20 hrs)

Introduction to MS Office - MS Word and Open Office – Writer:

MS Word - Working with Documents -Opening & Saving files, editing text documents, Inserting,Deleting, Cut, Copy, Paste, Undo, Redo, Find, Search, Replace, Formatting page & setting Margins, converting files to different formats, Importing & Exporting documents, sending files to others, Using Tool bars, Ruler, Using Icons, using help,

Formatting Documents - Setting Font styles, Font selection- style, size, colour etc, Type face - Bold, Italic, Underline, Case settings, Highlighting, Special symbols, Setting Paragraph style, Alignments, Indents, Line Space, Margins, Bullets & Numbering.

Setting Page style - Formatting Page, Page tab, Margins, Layout settings, Paper tray, Border & Shading, Columns, Header & footer ; Inserting manual page break, Column break and line break, Creating sections & frames, ,Setting Document styles.

Creating Tables- Table settings, Borders, Alignments, Insertion, deletion, Merging, Splitting, Sorting, and Formula,

Drawing - Inserting ClipArts, Pictures/Files etc., **Tools** – Word Completion, Spell Checks

Printing Documents – Shortcut keys.

UNIT 4 (20 hrs)

Introduction to MS Office – MS Excel and Open Office – Calc:

MS Excel: Spread Sheet & its Applications, Opening Spreadsheet, Menus -

main menu, Formula Editing, Formatting, Toolbars, Using Icons, Using help, Shortcuts, Spreadsheet types. Working with Spreadsheets- opening, Saving files, setting Margins, Spread sheet addressing - Rows, Columns & Cells, Referring Cells & Selecting Cells – Shortcut Keys.

Entering & Deleting Data- Entering data, Cut, Copy, Paste, Undo, Redo, Highlighting values, Find, Search & replace, Inserting Data, Insert Cells, Column, rows & sheets.

Setting Formula - finding total in a column or row, Mathematical operations (Addition, Subtraction, Multiplication, Division), Using other Formulae.

Formatting Spreadsheets- Labelling columns & rows, Formatting- Cell, row, column & Sheet, Category - Alignment, Font, Border & Shading, Hiding/ Locking Cells, Worksheet Row & Column Headers, Sheet Name.

UNIT 5 (20 hrs)

Introduction to MS Office-MS Power Point and Open Office-Impress:

MS Power point: Introduction to presentation – Opening new presentation, Different presentation templates, Setting backgrounds, Selecting presentation layouts.

Creating a presentation - Setting Presentation style, Adding text to the Presentation.

Formatting a Presentation - Adding style, Colour, Arranging objects, Adding Header & Footer, Slide Background, Slide layout. Adding Graphics to the Presentation- Inserting pictures, movies, tables etc into presentation.

Adding Effects to the Presentation- Setting Animation & transition effect.

UNIT 6(15 hrs)

Internet and Web Browsers: Definition & History of Internet - Uses of Internet - Definition of Web- Addressing-URL Browsers and its types, internet browsing, searching - Search Engines - Portals - Social Networking sites- Blogs - viewing a webpage, downloading and uploading the website.

Introduction to its Applications:

Email- Creating an email-ID, e-mail reading, saving, printing, forwarding and deleting the mails, checking the mails, viewing and running file attachments, addressing with cc and bcc.

Google Form- Create google form, applying validation controls, setting timer, applying autochecking options in MCQs.

Suggested reading and reference books:

1. Fundamentals of computers - V.Rajaraman - Prentice- Hall of india
2. Microsoft Office 2007 Bible - John Walkenbach,Herb Tyson,Faithe Wempen,cary N.Prague,Michael R.groh,Peter G.Aitken, and Lisa a.Bucki -Wiley India pvt.ltd.
3. The complete reference Linux - Richard petersen - Tata McGraw - Hill Edition
4. A Conceptual Guide to OpenOffice.org 3 - R. Gabriel Gurley- CreateSpace Independent Publishing Platform, 2008

CREATING APPLICATION FOR BEGINNERS

Course Duration: 120 hrs

Eligibility: Graduate/ Graduating/ 12th pass

Course objectives: This course will give the basic background, terminology and fundamental concepts that you need to understand in order to build modern full stack web applications. A full stack web developer is familiar with each "layer" of the software technologies involved in a web application, including data modeling and database technologies, the web server environment and middleware components, network protocols, the user interface and basic visual design and user interaction concepts.

Course Outcomes:

1. **Describe fundamentals of web**
2. **Introduce the creation of static webpage using HTML**
3. **Describe the importance of CSS in web development**
4. **Describe the function of JavaScript as a dynamic webpage creating tool**

Course Content:

UNIT 1(30 hrs)

HTML and CSS: HTML Basic: HTML Tag Reference, Global Attributes, Document, Structure Tags, Formatting Tags, Text Level Formatting, Block Level Formatting, List Tags, Executable Content Tags.

Image & Imagemaps: Introduction, Client-Side Imagemaps, Server-Side Imagemaps, Using Server-Side and Client-Side Imagemaps Together, Alternative Text for Imagemaps.

Tables: Introduction to Html Tables and Their Structure, The Table Tags, Alignment, Aligning Entire Table, Alignment within a Row, Alignment within a Cell, Attributes, Content Summary, Background Color, Adding a Caption, Setting the Width, Adding a Border, Spacing Within a Cells, Spanning Multiple Rows or Columns, Elements that and be Placed in a Table, Table Sections and Column Properties, Table as a Design Tool.

Frames: Introduction to Frames, Applications, Frames document, The<FRAMESET> tag, Nesting <FRAMESET> tag, Placing content in frames with the <FRAME> Tag, Targeting named Frames, Creating Floating Frames, Using Hidden Frames.

Forms: Creating Forms, The<FORM> tag, Named Input fields, The <INPUT> tag, Multiple lines text windows, Drop Down and List Boxes, Hidden, Text, Text Area, Password, File Upload, Button, Submit, Reset, Radio, Checkbox, Select, Option, Forms and Scripting, Action Buttons, Labelling input files, Grouping related fields, Disabled and read-only fields, Form field event handlers, Passing form data.

Style Sheets: Definition, Importance, Different Approaches to Style Sheets, Using Multiple Approaches, Linking to Style Information to Separate File, Setting up Style Information in Separate File, Setting up Style Information, Using<STYLE> Tag, Inline Style Information.

UNIT 2(90 hrs)

PHP & SQL

1. Introduction to PHP: Evaluation of Php, Basic Syntax, Defining variable and constant, Php Data type, Operator and Expression.
2. Decisions and loop Making Decisions, Doing Repetitive task with looping, Mixing Decisions and looping with Html.
3. Function What is a function, define a function, call by value and Call by reference, Recursive function, String Creating and accessing, String Searching & Replacing String, Formatting String, String Related Library function
4. Array Anatomy of an Array, Creating index based and Associative array Accessing array, Element Looping with Index based array, Looping with associative array using each () and foreach(), Some useful Library function.
5. Handling Html Form with Php Capturing Form, Data Dealing with Multi-value filed, and Generating File uploaded form, redirecting a form after submission.
6. Working with file and Directories Understanding file& directory, Opening and closing, a file, Coping, renaming and deleting a file, working with directories, Creating and deleting folder, File Uploading & Downloading.
7. Session and Cookie Introduction to Session Control, Session Functionality What is a Cookie, Setting Cookies with PHP. Using Cookies with Sessions, Deleting Cookies, Registering Session variables, Destroying the variables and Session.
8. Database Connectivity with MySql Introduction to RDBMS, Connection with MySql Database, Performing basic database operation(DML) (Insert, Delete, Update, Select), Setting query parameter, Executing query Join (Cross joins, Inner joins, Outer Joins, Self joins.)
9. Exception Handling Understanding Exception and error, Try, catch, throw. Error tracking and debugging

Suggested reading and reference books:

1. **Web Designing and Publishingby Prof. Satish Jain and M. Geetha Iyer**
2. World wide web Design with HTML(First Edition-2010) Tata McGraw Hill By C Xavier

3. Web Enabled commercial application development using HTML, Javascript, DHTML and php BPB Publication. By Ivan Bayross
4. The Complete Reference HTML and CSS (Fifth Edition) McGraw Hill Education Thomas A Powell
5. PHP and MySQL for Dynamic Web Sites, Fourth Edition: Visual QuickPro Guide 4th Edition, Kindle Edition by Larry Ullman (Author) Format: Kindle Edition

MACHINE LEARNING

Course Duration: 120 hrs

Eligibility: Graduate/ Graduating/ 12th pass

Course Objectives

- To introduce students to the basic concepts and techniques of Machine Learning.
- To develop skills of using recent machine learning software for solving practical problems.
- To gain experience of doing independent study and research.

Course Outcomes:

- 1.Explain Machine Learning concepts, classifications of Machine Learning and write simple programs using python.
- 2 Describe Supervised Learning concepts.
- 3 Explain Support Vector Machine concepts.
- 4 Describe unsupervised learning concepts and dimensionality reduction techniques.
- 5 Discuss simple Machine Learning applications in a range of real-world applications using Python programming

Course Content:

Unit 1 (30 hrs)

Introduction: Introduction to machine learning, use of machine learning, type of machine learning: supervised, unsupervised and reinforcement learning, Main challenges in machine learning Preparation of Model: Introduction to Statistical Learning, Significance of Mean, Mode, Median, variance, standard deviation, Basic types of data in machine learning, Exploring structure of data, Data quality and remediation, Data pre-processing. Modelling and evaluation: Model Selection, Training, Model representation and interpretability, evaluating performance of a model.

UNIT-II (30 hrs)

Supervised Learning (Regression/Classification): Basic methods: Distance-based methods, Decision Trees, random forest model, Naive Bayes Linear models: Simple Linear Regression, Multiple linear regression, Polynomial regression, Logistic Regression.

UNIT-III (30 hrs)

Unsupervised Learning (Clustering): Different types of clustering techniques, K-medoids, K-means/Kernel K-means, Hierarchical clustering Dimensionality Reduction: Principal Component Analysis (PCA) and Linear Discriminant Analysis (LDA), Introduction to Matrix Factorization and Matrix Completion

UNIT-IV (30 hrs)

Support Vector Machines (SVM): Linear learning machines and Kernel space, Making Kernels and working in feature space, SVM for classification and regression problems. Recent trends in machine learning.

Suggested reading and reference books:

1. Python The Complete Reference by Martin C. Brown
2. Linear And Non-Linear Regression Wiley Series
3. Deep Learning with Python by Francois Chollet

DATA SCIENCE

Course Duration: 120 hrs

Eligibility: Graduate/ Graduating/ 12th pass

Course Objectives:

1. Provide Insights About the Roles of a Data Scientist
2. Enable You to Analyze of Big Data
3. Learn Techniques and Tools for Transformation of Data
4. Make You Understand Data Mining

Course outcomes:

- Students will develop relevant programming abilities.
- Students will demonstrate proficiency with statistical analysis of data.
- Students will develop the ability to build and assess data-based models.
- Students will execute statistical analyses with professional statistical software.
- Students will demonstrate skill in data management.
- Students will apply data science concepts and methods to solve problems in real-world contexts and will communicate these solutions effectively

Course Content:

Unit 1 (30 hrs)

Introduction to Core Concepts and Technologies: Introduction, Terminology, data science process, data science toolkit, Types of data, Example applications. Data Collection and Management: Introduction, Sources of data, Data collection and APIs, Exploring and fixing data, Data storage and management, Using multiple data sources

UNIT-II (30 hrs)

Data Analysis: Introduction, Terminology and concepts, Introduction to statistics, Central tendencies and distributions, Variance, Distribution properties and arithmetic, Samples/CLT, Basic machine learning algorithms, Linear regression, SVM, Naive Bayes.

UNIT-III (30 hrs)

Data Visualization: Introduction, Types of data visualization, Data for visualization: Data types, Data encodings, Retinal variables, Mapping variables to encodings, Visual encodings.

UNIT-IV (30hrs)

Applications of Data Science, Technologies for visualization, Bokeh (Python) Recent trends in various data collection and analysis techniques, various visualization techniques, application development methods of used in data science.

Suggested and reference books

1. Practical Statistics for Data Scientists – By Peter Bruce and Andrew Bruce
2. Introduction to Probability – By Joseph K. Blitzstein and Jessica Hwang

PROGRAMMING WITH PYTHON

Course Duration: 120 hrs

Eligibility: Graduate/ Graduating/ 12th pass

Course objectives

1. To acquire programming skills in core Python.
2. To acquire Object Oriented Skills in Python
3. To develop the skill of designing Graphical user Interfaces in Python
4. To develop the ability to write database applications in Python

Course Outcomes:

1. Define and demonstrate the use of built-in data structures “lists” and “dictionary”.
2. Design and implement a program to solve a real world problem.
3. Design and implement GUI application and how to handle exceptions and files.
4. Make database connectivity in python programming language.

Course Content:

UNIT I (24 HRS)

Introduction to Python Programming Language. Strengths and Weaknesses, • IDLE, Dynamic Types, • Naming Conventions, • String Values, • String Operations, • String Slices, • String Operators, • Numeric Data Types, • Conversions, • Built In Functions

UNIT II (24 HRS)

Data Collections and Language Component: Introduction, • Control Flow and Syntax, • Indenting, • The if Statement, • Relational Operators, • Logical, • Operators, • True or False, • Bit Wise Operators, • The while Loop, break and continue, • The for Loop, Lists, • Tuples, • Sets, • Dictionaries, • Sorting Dictionaries, • Copying Collections.

UNIT III (24 HRS)

Object and Classes: Classes in Python • Principles of Object Orientation • Creating Classes • Instance Methods • File Organization • Special Methods • Class Variables • Inheritance • Polymorphism • Type Identification • Custom Exception Classes

UNIT IV (24 HRS)

Functions and Modules: Introduction • Defining Your Own Functions • Parameters • Function Documentation • Keyword and Optional Parameters • Passing Collections to a Function • Variable Number of Arguments • Scope • Functions - "First Class Citizens" • Passing Functions to a Function • Mapping Functions in a Dictionary • Lambda • Modules • Standard Modules – sys • Standard Modules – math • Standard Modules – time • The dir Function

UNIT V (24 HRS)

I/O and Error Handling In Python: Introduction • Data Streams • Creating Your Own Data Streams • Access Modes • Writing Data to a File • Reading Data From a File • Additional File Methods • Using Pipes as Data Streams • Handling IO Exceptions • Working with Directories • Metadata • Errors • Run Time Errors • The Exception Model • Exception Hierarchy • Handling Multiple Exceptions

Suggested and Reference Books

- Python Programming: A Modern Approach, Vamsi Kurama, Pearson
- Learning Python, Mark Lutz, Orielly
- Think Python, Allen Downey, Green Tea Press
- Core Python Programming, W.Chun, Pearson.
- Introduction to Python, Kenneth A. Lambert, Cengage

MOBILE APPLICATION DEVELOPMENT

Course Duration: 120 hrs/ 6 months

Eligibility: Graduate/ Graduating/ 12th pass

Course objectives: Android is the most popular Mobile OS, having the largest installed base and is a market leader in Mobile Technology. There is a huge demand for skilled Android Developers all over the world. Most businesses across multiple domains are building Android Apps both for enterprise and retail products. Whether you are a student or an IT Professional, possessing Android Development skills will help you take the next big leap in your career.

Course Outcomes:

- Recognizes mobile computing platforms and mobile computing
- Recognizes smart devices
- Recognizes mobile development environments.
- Explains the basic concepts of Android phone features and capabilities.

Course Content:

UNIT I(15 HRS)

1. Introduction

- a. Introduction to Mobile Computing
- b. Introduction to Android Development Environment

2. Factors in Developing Mobile Applications

- a. Mobile Software Engineering
- b. Frameworks and Tools
- c. Generic UI Development
- d. Android User

3. More on UIs

- a. VUIs and Mobile Apps
- i. Text-to-Speech Techniques
- b. Designing the Right UI
- c. Multichannel and Multimodal UIs

4. Intents and Services a. Android Intents and Services

- b. Characteristics of Mobile Applications
- c. Successful Mobile Development

UNIT II (15 HRS)

5. Storing and Retrieving Data

- a. Synchronization and Replication of Mobile Data
- b. Getting the Model Right
- c. Android Storing and Retrieving Data
- d. Working with a Content Provider

6. Communications Via Network and the Web

- a. State Machine

- b. Correct Communications Model
- c. Android Networking and Web

7. Telephony

- a. Deciding Scope of an App
- b. Wireless Connectivity and Mobile Apps
- c. Android Telephony

UNIT III (15 HRS)

8. Notifications and Alarms

- a. Performance
- b. Performance and Memory Management
- c. Android Notifications and Alarms

9. Graphics

- a. Performance and Multithreading
- b. Graphics and UI Performance
- c. Android Graphics

10. Multimedia

- a. Mobile Agents and Peer-to-Peer Architecture
- b. Android Multimedia

11. Location

- a. Mobility and Location Based Services
- b. Android

UNIT IV (15 HRS)

12. Putting It All Together

- a. Packaging and Deploying
- b. Performance Best Practices
- c. Android Field Service App

13. Security and Hacking

- a. Active Transactions
- b. More on Security
- c. Hacking Android

14. Platforms and Additional Issues

- a. Development Process
- b. Architecture, Design, Technology Selection
- c. Mobile App Development Hurdles
- d. Testing

PROJECTS(60 HRS)

Suggested and Reference Books

1. Android Programming with Kotlin for Beginners by John Horton
2. Head First Android Development: A Brain-Friendly Guide

PROGRAMMING OF CNC LATHE AND MILLING MACHINE

Course Duration: 60 hrs / 1.5 months

Eligibility: Graduate/ Graduating/ 12th pass

Course objectives:

- To understand the need of automation, CNC tuning and milling operations.
- To select the cutting tools and cutting parameters.
- To learn the manual part programming of CNC and tool setting.
- To study the industrial safety policies.

Course outcome:

1. Realize the importance of automation, CNC tuning and milling operations for various industrial applications.
2. To formulate the cutting parameters based upon the selected tools.
3. To make manual part programming of CNC and tool setting.
4. To understand the industrial safety policies

Benefits of course: Students can get a job of CNC programmer

Course Content:

Introduction	Automation, NC, CNC and DNC, History of development, classification of CNC, need and importance of automation in modern industry, Industry 4.0 concept.	6 hrs
Turning operations	Various turning and milling operations such as facing, turning, taper turning, drilling, boring, reaming, threading, tapping etc.	6 hrs
Cutting tools	Types of cutting tools for turning operations, prediction of tool life, tool wear, cutting parameters such as cutting feed, depth of cut, constant surface speed, spindle rpm, role of coolant, types of coolant.	6 hrs
Co-ordinate System	Types of co-ordinate systems, work piece zero-point, Machine reference point	3 hrs
CNC Part Programming	Types of CNC part Programming, Generation of G-codes, M- codes, T-codes, F-codes etc. Generation of manual part programming for tuning, facing, taper turning, threading, milling, drilling, tapping, boring operations	24 hrs
Tool setting	Tool length offset, cutter radius offset, how to take offsets, turret types, mounting tools in turret, types of fixtures used in CNC turning, types of chucks.	6 hrs
Industrial Safety	Comply with Environmental & Safety Policies of Organization, identify personal safety, Job Safety & Machine Safety, coordinate with other resources at the workplace to achieve the healthy and safe.	3 hrs
Exercises	Practice for various industrial jobs	6 hrs

Additional Infrastructure requirement: CNC simulator software for training

COMPUTER AIDED DRAFTING OF MECHANICAL COMPONENTS

Course Duration: 60 hrs / 1.5 months

Eligibility: 12th standard

Course objectives:

- To understand the graphic interface of drafting software.
- To learn various sketch commands and tools
- To learn the part modelling, curves, assembly and surfaces.
- To study the use of software for industrial applications.

Course outcome:

1. To perform the setting of graphic interface of drafting software.
2. To use various sketch commands and tools.
3. To do the part modelling, curves, assembly and surfaces.
4. To handle software for industrial application

Benefits of course: Students can get a job of Designer

Course Content:

Introduction	Drafting software Graphical User Interface, Feature manager design tree, Callouts, Handles, Confirmation corner, mouse buttons, keyboard shortcuts, Command Manager, Hardware and Software requirements.	2hrs
Sketcher	Sketch Entities – Inference line, Center line, Line, Circle, Arc, Ellipse, Rectangle, Slots, Polygon, Parabola, Ellipse, Partial Ellipse, Spline, Spline tools, Spline on surface, Equation driven curve, Points, Text, Construction geometry, Snap, grid.	6 hrs
Sketch Tools	Fillet, Chamfer, Offset, convert entities, Intersection curve, Face curve, Trim, Extend, Split, Jog Line, Construction Geometry, Mirror, Dynamic Mirror, Move, Copy, Rotate, Scale, Stretch, Sketch pattern, Polygon, make path, Close Sketch to Model, Sketch picture, Check Sketch for Feature, Area hatch/Fill.	6 hrs
Part Modeling	Part Modeling Tools Creating reference planes, Creating Extrude features – Direction1, Direction2, from option, thin feature, applying draft, selecting contours Creating Revolve features – Selecting Axis, Thin features, selecting contours Creating Swept features-Selecting, Profile and Path, Orientation/twist type, Path Alignment, Guide Curves, Start/End tangency, Thin feature, chamfer, shell, rib, fillet, patterns.	10 hrs
Curves	Split curve, Project curve, Composite curve, Curve through points, Helix and Spiral.	6 hrs

Surfaces	Surface Modeling tools, Creating Extrude, Revolve, Swept, loft, Boundary surface. Inserting Planar Surface, Offset Surface, Radiate Surface. Extending a surface, Surface fill, Ruled Surface, Trimming Surface	6 hrs
Assembly	Introduction to Assembly Modeling & Approaches, Top down and Bottom-up approach Applying Standard Mates-Coincident, Parallel, Perpendicular, Tangent, Concentric, Lock, Distance, Angle.	6 hrs
Exercises	Practice for industrial design and assembly	18 hrs

Additional Infrastructure requirement: Software for training

COMPUTER AIDED DESIGN (CAD)

Course Duration: 100 hrs / 3 months

Eligibility: Graduate/ Graduating/ 12th pass

Course Prerequisites: The students should have basic knowledge of computer.

Course Objectives: to train students about computer aided design software.

Course Outcome: Student shall be able to draft and design projects in computer aided design software.

Course Content:

L: 02 S: 00 P: 04 T:00

AutoCAD workspaces are sets of menus

1. Draw- Line command Poly line command Rectangle command, Move, Rotate, Scale, copy, Mirror, erase, trim, extend
2. Modify- Drawing units Sheet settings
3. Layers
4. Annotations
5. Block
6. Properties
7. Utilities
8. Clip board
9. View
10. Insert references
11. Area calculations
12. Cutting sections
13. Plot
14. Page settings/prints
15. Import & export Save files Export pdf plot
16. Drafting the Plans, Sections, and Elevations of buildings.
17. Text writing and dimensioning of the Plans, Elevation and Sections

Instruction to the students: computer and software shall be arranged by students themselves.

Note: No University exam, only internal & external viva voce.

STOCK MARKET TRADING FOR BUSINESS

Course Duration: 60hrs / 10 Weeks

Eligibility: Graduate/ Graduating/ 12th pass

This course is useful for

- a) fresher's who would like to get introduced to the basic market terminologies and concepts.
- b) New Investors, Retail Traders, and Financial Service Professionals.

Course Objectives:

After Completing the online course, Students will be able to

1. Understand the market timing and Behaviour with change in business and economic scenario
2. Understand the IPOs and identify the valuable IPO for investment
3. Perform Fundamental Analysis to find the valuable companies for investment
4. Perform Technical Analysis to identify suitable time to invest in market
5. Learn trading tricks for investment

Course Content:

Week 1 - Indian Stock Exchanges: Market types, order types and books. BSE: BOLT System, NSE: NEAT system, Stock Indices, **OTCEI** – Need, Features, Participants, Listing procedure, Trading and Settlement. Legislative framework guiding the capital markets and intermediaries.

Week 2 - Regulators: Finance Ministry, Securities Exchange Board of India (SEBI), Reserve Bank of India, Forward Market Commission, Insurance Regulatory and Development Authority Primary Market: Role of Primary Market, Functions, Intermediaries,

Week 3 - Stocks-Types of Stocks(name),

Trading cycle: T+2 Trading Cycle, Pay in and Pay out, Bad Delivery, Short delivery
Auction Clearing & Settlement: Different types of settlements, DEMAT settlement, Physical settlement, Institutional segment and Funds settlement.

Week 4 - Capital Market, Capital Market Listing of Securities - Listing of Securities: Listing requirements, procedure, fee- Listing conditions of BSE and NSE – Delisting. Legislative k related to listing.

IPO Process, Methods of floatation of Capital: IPO's, FPO's and Right issues, Investor protection in primary market, Recent trends in primary market. Book building process.

Week 5 - Investment Strategies - Fundamental Analysis

Industry Analysis: Industry Life Cycle, Key Characteristics in Industry Analysis.

Company Analysis: Analysis of Financial Statements, Key Financial Ratios

Week 6 - Investment Strategies - Technical Analysis (With Software)

Introduction, Basic Tenets of Dow Theory, Characteristic Phases of Bull and Bear Trends, Critical Appraisal of Dow theory, Key Technical Indicators, Different Types of Charts – Line Chart, Bar Chart, Candle Stick Charts, Point & Figure Charts,

Week 7 - Investment Strategies - Technical Analysis (With Software)

Concept of Trend, Trend Lines: Support and Resistance, Breakouts, Stops, Retracement, Importance of Volume, Reversal Patterns, Continuation Pattern, Moving Averages, Envelops and other Market Indicators

Week 8 - Derivative Markets

Future, Forward, Options, Option Pay off Strategies,

Week 9 - Online Trading, Common Errors while Trading

Week 10 - Evaluation of Students – Final Exam

PERSONALITY DEVELOPMENT

Course Duration: 60 hrs / 10 weeks

Eligibility: Graduate/ Graduating/ 12th pass

This course is useful for

- a) The course is useful for all the UG and PG students.
- b) For all the entrepreneurs.

Course Objectives:

After Completing the online course, Students will be able to

1. Understand the basic components of personality development.
2. Understand the various ingredients of communication skills.
3. Understand the manners of facing interviews and required Gestures and Posters during interview.

Course Content:

Week 1 - FORMING VALUES- Values and Attitudes, Importance of Values, Self-Discipline, Personal Values - Cultural Values-Social Values-some examples, Recognition of one's own limits and deficiencies.

DEVELOPING POSITIVE ATTITUDE- Introduction. Formation of attitude. Attitude in workplace. Power of positive attitude. Examples of positive attitudes. Negative attitudes. Examples of negative attitude. overcoming negative attitude and its consequences. **IMPROVING PERCEPTION-** Introduction. Understanding perception. perception and its application in organizations.

Week 2 - ETIQUETTE AND MANNERS- ETIQUETTE- Introduction, Modern Etiquette, Benefits of Etiquette, Taboo topics, Do's and Don'ts for Men and Women. **MANNERS-** Introduction, Importance of manners at various occasions, Professional manners, Mobile manners. **CORPORATE GROOMING TIPS-** Dressing for Office: Do's and Don'ts for Men and Women, Annoying Office Habits.

Week 3- ART OF LISTENING- Proxemics, Haptics: The Language of Touch, MetaCommunication, Listening Skills, Types of Listening, Listening tips.

BODY LANGUAGE - Introduction- Body Talk, Forms of body language, uses of body language, Body language in understanding Intra and Inter-Personal Relations, Types of body language, Gender differences, Gaining confidence with knowledge of Kinesics.

Week 4 - ART OF READING-Introduction. Benefits of reading. Tips for effective reading. the SQ3R technique. Different stages of reading. determining reading rate of students. Activities to increase the reading rate. Problems faced. Becoming an effective reader.

ART OF WRITING - Introduction, Importance of Writing Creative Writing, Writing tips, Drawback of written communication. **ART OF BUSINESS WRITING** - Introduction, Business Writing, Business Letter, Format and Styles, Types of business letters, Art of writing correct and precise mails, Understand netiquette.

Week 5- TEAM BUILDING AND TEAMWORK - Introduction, Meaning, Characteristics of an effective team, Role of a Team Leader, Role of Team Members, inter group Collaboration Advantages, Difficulties faced, Group Exercises-Team Tasks and Role-Play, Importance of Group Dynamics

Week 6 - STRESS MANAGEMENT - Introduction. meaning. positive and negative stress. Sources of stress. Case studies. signs of stress. Stress management tips. Teenage stress

Week 7 - TIME MANAGEMENT - Introduction, the 80-20 Rule, three secrets of Time Management, Time Management Matrix, Effective Scheduling, Time Wasters, Time Savers, Time Circle Planner, Difficulties in Time Management, Overcoming Procrastination.

Week 8 - ART OF SPEAKING- Introduction. Communication process. Importance of communication, channels of communication. Formal and informal communication. Barriers to communication. Tips for effective communication. tips for conversation. Presentation skills. Effective multi-media presentation skills. Speeches and debates. Combating nervousness. Patterns and methods of presentation. Oral presentation, planning and preparation.

Week 9- GROUP DISCUSSION- Introduction. Importance of GD. Characters tested in a GD. Tips on GD. Essential elements of GD. Traits tested in a GD .GD etiquette. Initiating a GD. Nonverbal communication in GD. Movement and gestures to be avoided in a GD. Some topics for GD.

CAREER PLANNING-Introduction. Tips for successful career planning. Goal setting immediate, short term and long term. Strategies to achieve goals. Myths about choosing career.

Week 10 - PREPARING CV/RESUME-Introduction – meaning – difference among biodata, CV and resume. CV writing tips. Do's and don'ts of resume preparation. Vocabulary for resume, common resume mistakes, cover letters, tips for writing cover letters.

INTERVIEW SKILLS - Introduction. Types of interviews. Types of question asked. Reasons for rejections. Post-interview etiquette. Telephonic interview. Dress code at interview. Mistakes during interview. Tips to crack on interview. Contextual questions in interview skills. Emotional crack an interview. Emotional intelligence and critical thinking during interview process.

CERTIFICATE COURSE IN FOOD SAFETY AND QUALITY CONTROL
Course Duration: 45 hrs / 3 months Eligibility: Graduate/ Graduating/ 12th pass

Course Objectives:

1. Develop skill of ensuring food safety by carrying out various quality tests.
2. Create an ability to identify adulterated foods along with their effects on human health and environment.
3. Creating an ability to determine the various factors affecting the microbiological quality of food.
4. Acquiring knowledge about various food safety laws and their implementation along with their relation with safety of food products.

Course Outcomes:

1. Understanding the concepts of food safety and food microbiology to ensure the safety of processed food and raw material.
2. Managing the food Hygiene Practices to ensure the selection of safe raw material and production of safe food products.
3. Engage into life-long learning by awaring students about the role of food laws and their implementation in daily life.
4. To analyze problems of various food industries associated with food safety and food spoilage as an individual or a team leader in a multi-disciplinary environment.

Course Content:

This course of Food Safety and Quality control provides unbiased and concise overviews which covers broad range of food safety topics, which may be grouped under the following general categories: History and basic sciences that support food safety; Food borne diseases, including surveillance and investigation; Food – borne hazards, including microbiological and chemical agents; Substances added to food, both directly and indirectly; Food technologies, including the latest developments; Food commodities, including their potential hazards and controls; Food safety management systems, including their elements and the roles of stakeholders.

SYLLABUS

Module 1: Introduction to microbiology and the control of microorganisms in foods.

Module 2: Monitoring and testing of foods.

Module 3: Food safety regulation and enforcement.

Module 4: Environmental Health and Food Hygiene Management

- Introduction to food hygiene management.
- Construction and design of food premises.

- Licensing requirements and conditions on some common types of food licenses.
- Pest control.
- Food incident, complaint and response.
- Personal hygiene.
- Hygiene management of food.

Module 5: Quality Assurance

- Introduction to HACCP.
- Quality improvement methods.
- Regulations and processes.
- Overview to ISO 9000/22000.
- Occupational safety and health.
- Sensory evaluation.

CERTIFICATE COURSE IN NUTRITION AND DIETETICS

Course Duration: 45 hrs / 3 months

Eligibility: Graduate/ Graduating/ 12th pass

Course Objectives:

1. Acquiring knowledge about the physiology and anatomy of human body.
2. Develop the skill of preparing diet plans as per the requirement of different age groups.
3. Developing capability to use nutrient rich foods for the prevention of various diseases.

Course Outcomes

1. Understanding the concepts of food nutrition to provide valuable knowledge related to nutrition and health benefits of various nutritional components.
2. Creating an ability to prepare diet plans as per the requirement of different age groups and to overcome various nutritional deficiencies.
3. Engage into life-long learning by awaring students about the role of nutrition in maintaining a healthy lifestyle.
4. Developing an ability to communicate effectively with society on the issues related to nutrition and its role in disease prevention.

Course Content: Nutrition and Dietetics is an emerging field of healthcare. It is not just a growing industry but a whole new area that understands the need of good food habits and imparts guidance to develop a healthy world. Growing public interest in “taking control” of one's health is likely to improve employment prospects for dietetics professionals. These professionals would design dietary treatments not only for diseased individuals but also work on some health drives for those who love to lead a hale and hearty lifestyle. The growing and aging population will also contribute to this increasing demand for precise nutrition information and diet plans.

This course is designed to provide thorough knowledge of the subject to help you analyze the accurate body requirements and expertise your skills in science of Nutraceuticals, their good and their best. These nutraceuticals and health supplements are actually the soul to build perfect diet schedule so that nailed diet therapy could be provided.

Module 1: Introduction to Human Biology and Body Functions.

Module 2: Nutrients (Role and Significance)

- Understanding Nutrition (Basic diets for normal conditions/RDA)
- Advanced Nutrition
- Nutritional Biochemistry
- Food Allergies and Diet Management

Module 3: Introduction to Nutraceuticals

- Introduction to Special Conditions and Diet Therapy
- Introduction to Clinical Nutrition
- Recommend Approaches to Disease and Nutrition

Module 4: Food Microbiology

- Path Physiology and Metabolism in Disease

Module 5: Public Nutrition and Health

- Paediatric and Geriatric Nutrition

PUNJAB STATE AERONAUTICAL ENGINEERING COLLEGE

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Ref. No. PSAEC/2021/

Dated: 27/08/2021

Minutes of Meeting

The 7th BoS was held on 27/08/2021 on Google Meet Platform at 10.30 AM. In reference to letter no. :PSAEC/2021/1119 Dated 17/08/2021 regarding compliance of pending points of BoS held on 26/03/2021, the final discussions on schemes of 7th and 8th Semester of B. Tech Aeronautical Engineering were held and schemes have been finalised. Following were present: -

- 1 Prof Rakesh Kumar- Chairman
2. Prof Amarjit Singh-Member
3. Sh Subash Chander-Member
4. Sh Jimmy Kansal-Member
5. Prof Tushar Siag-Member
6. Prof Anju Sharma-Special Invitee
7. Prof Balraj Singh- Director PSAEC/Special Invitee

The detail of today's proceedings is as follows:-

- 1) Two additional books for “Avionics” for the semester in B.tech Aeronautical Engineering have been included as suggested by Chairman BoS. These two books have been mentioned in the syllabus at serial no 4 & 5 and has been approved by the BoS Members.
- 2) Regarding “Aircraft design” subject the two additional books suggested by BoS Chairman have been mentioned at serial number 4 & 5 in the Syllabus. The BoS has approved the same.
- 3) The contents of “Aircraft Composite Materials” subject of 7th semester B.Tech Aeronautical Engineering, have been elaborated after detailed discussions. More over the additional books suggested by PEC faculty have been recommended in the syllabus and the complete scheme of this subject has been approved by BoS members.
- 4) The subject “Rocket & Missiles” has been put as compulsory subject while Jet propulsion & “Rocket & Missiles” have been made department electives in Pool-1. The books from DRDO/ AIAA have been included in the syllabus and the complete schemes have been approved by BoS members.
- 5) The subject of “Space Dynamics” have been included in syllabus of 8th Semester & the detailed contents have been put to all BoS members and same have been approved.
- 6) The Contents of CFRP (Carbon Fibre Reinforced Polymer) have been prepared after detailed discussion and have been approved by BoS members.

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- 7) Regarding “Flying Hours” to be included in the 7th & 8th semester, the matter has been discussed with Advisor Civil Aviation and as per the discussion held, it is proposed that two hours flying in 7th & 8th semester each on payable basis shall be made compulsory for each student. However, for those students who are interested & can pay additional charges, the flying hours can be extended upto 4 Hours in each (7th & 8th Sem) and making total 08 hours. Presently these flying hours donot carry any credits. The BoS members have approved the same for implementation.


Chairmain BoS suggested that in future if possible, during flying hours students must note down flight data from deck of plane and do calculations in Lab. For this the additional hardware and software needed such as “Lab View” software shall be arranged/purchased by PSAEC Patiala. For this, matter will be discussed with PSCAC experts about type of aircraft being used for flying hours and the possibility of data collection from the deck of that aircraft. Accordingly in future the matter will be discussed in BoS and requisite software/hardware shall be purchased after consultations.

- 8) It has been also suggest by BoS members, that if possible joint certification of flying hours shall be done by PSCAC and PSAEC so that students can have benefit of this experience in future. Regarding this point, matter will be discussed with PSCAC experts.
- 9) Discussions of inclusion of subject “Human Values 2 : Understanding Harmony” in either 3rd or 4th Semester from academic session 2021-22 shall be held in next BOS proposed.


The entire scheme of 7th and 8th Semester has been approved by 7th BoS held today i.e. on 27/08/2021.



(Rakesh Kumar)



(Amarjit Singh)


(Subhash Chander)


(Jimmy Kansal)


(Tushar Siag)


(Anju Sharma)


(Balraj Singh Sidhu)

MRSPTU BBA (AVIATION MANAGEMENT) SYLLABUS 2020 BATCH ONWARDS

Total ContactHours=20

TotalMarks= 600

Total Credits=22

Semester 3rd		Contact Hours			Max Marks		Total Marks	Credits
Subject Code	Subject Name	L	T	P	Int.	Ext.		
BBADS2-301	Consumer Behaviour	4	-	-	40	60	100	4
BBADS2-302	Marketing and Retail Management	4	-	-	40	60	100	4
BBADS2-303	E-Business Information Systems	4	-	-	40	60	100	4
BBADS2-304	Aviation Law and Aircraft rules & Regulations	4	-	-	40	60	100	4
BBADS2-305	Practicals on Skill Development*	-	-	-	100**	-	100	2
BHUMA-002	Environmental Science	4	-	-	40	60	100	4
Total		20	0	0	300	300	600	22

***Visit to Domestic Airport and preparation of a report on Traffic and Disaster Management.**

**** Int. marks shall be awarded on the basis of (50 marks for practical Record, 30 for Internal Test and 20 Marks for VIVA-VOCE conducted by the institution).**

TotalContactHours=20

TotalMarks=600

Total Credits=22

Semester 4 th		Contact Hours			Max Marks		Total Marks	Credits
Subject Code	Subject Name	L	T	P	Int.	Ext.		
BBADS1-401	Research Methodology	4	-	-	40	60	100	4
BBADS2-402	Financial Management	4	-	-	40	60	100	4
BBADS2-403	Travel and Tourism Management	4	-	-	40	60	100	4
BBADS2-404	Logistics & Air cargo Management	4	-	-	40	60	100	4
BBADS2-405	Business Regulations	4	-	-	40	60	100	4
BBADS2-406	Practicals on Skill Development*	-	-	-	100**	-	100	2
Total		20	0	0	300	300	600	22

MRSPTU BBA (AVIATION MANAGEMENT) SYLLABUS 2020 BATCH ONWARDS

***Short term project on Air Travel and Ticketing Analysis**

**** IA marks should be awarded on the basis of Practical Record submitted by the Student, Internal Assessment Test and VIVA-VOCE conducted by the institution (50 marks for practical Record, 30 for Internal Test and 20 Marks for VIVA-VOCE conducted by the institution).**

SEMESTER 3RD

MRSPTU BBA (AVIATION MANAGEMENT) SYLLABUS 2020 BATCH ONWARDS

CONSUMER BEHAVIOUR

Subject Code: BBADS2-301

L T P C
4 0 0 4

Duration: 60 Hrs.

Course Objectives:

This course aims at enabling students to

1. Understand the various aspects of consumer behaviour.
2. The external and internal factors that influence consumer behaviour
3. Apply this understanding to the development of marketing strategy.

Course Outcomes:

The student gets enabled to explore

1. The mysterious world of the consumer's psyche
2. What makes consumers to purchase particular product
3. How to avail a particular service.

UNIT-I (15 Hours)

Consumer Behaviour: Nature, Scope & Application, and Consumer Buying Behaviour: Consumer Decision Making Process (Five Step Model), Factors Affecting Buying Behaviour, Purchase Behaviour, Buyer's Role.

UNIT-II (15 Hours)

Consumer as an Individual: Consumer Motivation: Needs & Goals, Positive & Negative Motivation, Types & Systems of Needs Hierarchy & Trio of Needs, Introduction to Personality: Theories, Product Personality, Perception: Concept and Elements of Perception and Attitude with Reference to Consumer Behaviour.

UNIT-III (15 Hours)

Consumer in Social & Cultural Setting: Reference Groups: Concepts, Factors Affecting Reference Groups, Family: Functions of Family, Family Decision Making, Family Life Cycle Social Class & its Measurement, Culture & Sub Culture: Definition & Influence.

UNIT-IV (15 Hours)

Consumer Decision Making: Introduction to Opinion Leadership Process Diffusion of Innovations: Diffusion Process, Adoption Process, And Introduction to Consumer Decision Making: Levels, Decision Making Process, Various Views of Consumer Decision Making, and Models of Consumer Decision Making.

Suggestive Readings

1. Schiffman & Kanuk, 'Consumer Behavior', Pearson Education.
2. Engel, Blackwell & Miriand, 'Consumer Behavior', Dryden Press.
3. R. Majumdar, 'Consumer Behavior: Insights from the Indian Market', PHI Course Pvt. Ltd., New Delhi.
4. Bitta Loudon, 'Consumer Behavior', Tata McGraw Hill New Delhi.

MRSPTU BBA (AVIATION MANAGEMENT) SYLLABUS 2020 BATCH ONWARDS

MARKETING AND RETAIL MANAGEMENT

Subject Code: BBADS2-302

L T P C
4 0 0 4

Duration: 60Hrs

Course Objectives:

1. To provide an exposure to the students pertaining to the nature and Scope of marketing, which they are expected to possess when they enter the industry as practitioners.
2. Understand the features of Marketing and Retailing theories of retail development
3. To learn retail development in India and global retail markets

Course Outcomes:

1. Nature, Scope and Importance of Marketing
2. Market Segmentation, Target Market and Product Positioning
3. New Product : Need and Limitations for Development of a New Product
4. Retailing as a career - Business models in retail
5. Strategic planning process for global retailing.

UNIT-I (15 Hours)

INTRODUCTION TO MARKETING : Nature, Scope and Importance of Marketing, Evolution of Marketing; Core marketing concepts; Production concept, Product concept, Selling concept, Marketing concept. Marketing Environment: Micro and Macro Environment - Market Segmentation, Target Market and Product Positioning.

UNIT-II (16 Hours)

NEW PRODUCT DEVELOPMENT PRODUCT & PRICING DECISIONS: Introduction, Meaning of a New Product. Need and Limitations for Development of a New Product, Reasons for Failure of a New Product, Stages in New Product Development and Consumer Adoption Process. Concept of Product, Product Life Cycle (PLC), PLC marketing strategies, Product Classification, Product Line Decision, Product Mix Decision, Pricing Decisions: Concept of Price, Pricing Methods and Pricing Strategies.

UNIT-III (15 Hours)

RETAIL MANAGEMENT MODEL, THEORIES OF RETAIL DEVELOPMENT: Meaning – Functions and special characteristics of a Retailer – Reasons for studying. Retailing – Marketing – Retailer Equation – Marketing concepts applied to retailing – Retailing as a career – Trends in Retailing – Life cycle and phase in growth of retail markets – Business models in retail – other Retail models.

UNIT-IV (14 Hours)

GLOBAL RETAIL MARKETS: Strategic planning process for global retailing – Challenges facing global retailers – Challenges and Threats in global retailing – Factors affecting the success of a global retailing strategy.

Recommended Text Books / Reference Books:

1. Swapna Pradhan – Retailing Management – Text and Cases, Tata McGraw Hill – 2nd edition, 2004.
2. Barry Berman and Joel R Evans – Retailing Management – A Strategic Approach, Prentice Hall of India, 8th Edition, 2002.
3. James R. Ogden, Denise Ogden – Integrated, Retail Management – Biztantra 2005
4. Gibson G Vedamani – Retail Management – Functional Principles and Practice, Jaico Publishing House, Second edition, 2004.

MRSPTU BBA (AVIATION MANAGEMENT) SYLLABUS 2020 BATCH ONWARDS

5. Kotler Philip, Garyarmstrong, Prafullay. Agnihotri, EU Haque, “Principles of Marketing”, 2010, 13th Ed, Pearson Education Prentice Hall of Indi.
6. Paul Baines, Chris Fill, Kelly page, “ Marketing Management”, 2009, 1st Ed. Oxford University Press.
7. Kotler, P., Armstrong, G., Agnihotri, P.Y.,

E-BUSINESS INFORMATION SYSTEMS

Subject Code: BBADS2-303

L T P C
4 0 0 4

Duration: 60Hrs.

Course Objectives:

1. To familiarize student with aspect of business information systems and relevant information technology
2. To Develop skills to design and implement simple computer based business and audit

Course Outcomes:

1. Introduction to E-Business
2. Components and uses of Business Information Systems.
3. Management Support Systems (MSS), Decision Support Systems (DSS), Group Decision Support System (GDSS),
4. Introduction- Purpose of Database Systems ,Different types of Database Systems
5. Introduction to Tally, preparation of accounts books

UNIT-I (15 Hours)

INTRODUCTION TO E-BUSINESS AND INFORMATION SYSTEM: Introduction to E-Business- Meaning- Definition-Merits and Demerits of E Business- Meaning and definition of system, information and information system – business information system Features of Information system – Uses of Business Information Systems, Users of Information Systems – Components of Business Information Systems.

UNIT-II (15 Hours)

Management Support Systems (MSS), Management Information systems, Transaction Processing systems, Decision Support Systems (DSS), Group Decision Support System (GDSS), Office Automation system, Process Control systems, Executive Information systems, Levels of management and Information systems.

UNIT-III (14 Hours)

DATABASE MANAGEMENT SYSTEMS : Introduction- Purpose of Database Systems, Views of data, Data Models, Database language, Transaction Management, Storage Management, Database Administrator, Database Users, Overall System Structure, Different types of Database Systems.

UNIT-IV (16 Hours)

ACCOUNTING SOFTWARE AND GST : Introduction to Tally, opening new company, Safety of Accounts or Password, Characteristics, Making Ledger Accounts, writing voucher, voucher entry, making different types of voucher, correcting sundry debtors a sundry creditors accounts, preparation of Trail Balance, Accounts books, Cash Book, Bank Books, Ledger Accounts, Group Summary, Sales Register and Purchase Register, Journal Register, Statement of Accounts, & Balance Sheet. Systems and GST.

Suggestive Readings

1. James Obrein, Management Information Systems, Tata McGraw Hill

MRSPTU BBA (AVIATION MANAGEMENT) SYLLABUS 2020 BATCH ONWARDS

2. M. Suman _ Computer Application Business,VBH
3. R.G. Saha – Computer Application Business,HPH.
4. AmruthaGowri&Soundrarajana A, Computer Application Business,SHBP.
5. Manjunath, GunduRao – Computer Business Applications,HPH.
6. Sudaimuthu& Anthony: Computer Applications in Business,HPH.

AVIATION LAW AND AIRCRAFT RULES AND REGULATIONS

SubjectCode:BBADS2-304

L T P C
4 0 0 4

Duration: 60Hrs.

Course Objectives:

1. To enable the Students to learn the legal background of this AviationWorld
2. To understand the Rules and Regulations connected with Air Transportation including the InternationalRegulations
- 3.To learn all the relevant State Acts passed in thisrespect

Course Outcomes:

1. DGCA-Introduction to Directorate General of Civil Aviation-Functions,organisation.
2. Aircraft Act 1934 -The Aircraft Rules1937.
3. Various NationalLegislations.
4. Civil AviationRequirments.

UNIT-I (14 Hours)

CIVIL AVIATION REGULATIONS AUTHORITY:DGCA-Introduction toDirectorate General of Civil Aviation- DGCA functions- DGCA Organization-DGCAas RegulatoryAuthority.

UNIT-II (15Hours)

AIRCRAFT RULES:Aircraft Act 1934 -The Aircraft Rules 1937

UNIT-III (16 Hours)

NATIONAL LEGISLATION:The Air corporations Act, 1953 (27 of 1953) -The Air Corporations (Transfer of Undertakings and Repeal) Ordinance, 1994(4 of 1994) -The Air Corporations (Transfer of Undertakings and Repeal) Act, 1994 (13 of 1994) -The International Airports Authority of India act, 1971 (43 of 1971) -The National Airports AuthorityofIndia,1985(64of1985)-TheAirportsAuthorityofIndiaAct1994(55of1994) -TheCarriagebyAirAct,1972(69of1972)-TheTokyoConventionAct,1975(20of1975) -TheAnti-hijackingAct,1982(65of1975)-Thesuppressionofunlawfulactsagainstsafety of Civil Aviation Act, 1982 (66 of1982)

UNIT-IV(15 Hours)

CIVIL AVIATION REQUIREMENTS (CAR) :Section 1-General -Section 2- Airworthiness -Section 3-Air Transport -Section 4-Aerodrome standards and Air Traffic Services-Section5-AirSafety-Section6-Designstandardsandtypecertification-Section7- Flight crew standards, training and licensing -Section 8-Aircraftoperations
The Chicago conventions, 1944 -The International Air Services Transit Agreement, 1944 - The International Air Transport Agreement, 1944 -The Warsaw Conventions, 1920 -The Geneva Convention, 1948 -The Rome Convention, 1952 -The Tokyo Convention, 1963

Recommended Text Books / Reference Books:

Aircraft Manual, C.A.R. Sec. II

MRSPTU BBA (AVIATION MANAGEMENT) SYLLABUS 2020 BATCH ONWARDS

ENVIRONMENTAL SCIENCES

Subject Code: BHUMA-002

L T P C
2 0 0 2

Duration: 30 Hrs

Course Objectives

The aims of this course are:

- 0 To understand the nature of environmental problems and solutions
- 1 To use science to understand how the environment works
- 2 To acquire basic knowledge of earth's resources and its optimum utilization for sustainable development

Course Outcomes

After completion of this course, students will be able to:

1. Recognize how your lifestyle and actions affect the environment
2. Understand the affects of society on the environment
3. Use engineering equipment through laboratory investigations for air and noise pollution as a representative of industrial practices
4. Understand various society and environment related issues and find solution for them

UNIT-I (8 Hrs)

Natural Resources Renewable and Non-renewable Resources: Natural resources and associated problems. (a) Forest resources: Use and over-exploitation, deforestation. Timber extraction and their effects on forests and tribal people. (b) Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.

UNIT-II (7 Hrs)

Ecosystems (a) Concept of an ecosystem. (b) Structure and function of an ecosystem. (c) Producers, consumers and decomposers. (d) Energy flow in the ecosystem. (e) Ecological succession. (f) Food chains, food webs and ecological pyramids.

UNIT-III (7 Hrs)

Environmental Pollution Definition (a) Causes, effects and control measures of: i) Air pollution ii) Water pollution iii) Soil pollution iv) Marine pollution v) Noise pollution vi) Thermal pollution vii) Nuclear pollution (b) Solid Waste Management: Causes, effects and control measures of urban and industrial wastes.

UNIT-IV (8 Hrs)

Social Issues and the Environment (a) From unsustainable to sustainable development (b) Urban problems and related to energy (c) Water conservation, rainwater harvesting, Watershed Management (d) Resettlement and rehabilitation of people; its problems and concerns. (e) Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents, and holocaust

Suggested Readings

1. J.G. Henry and G.W. Heinke, 'Environmental Sc. & Engineering', Pearson Education, 2004.
2. G.B. Masters, 'Introduction to Environmental Engg. & Science', Pearson Education, 2004.
3. Erach Bharucha, 'Textbook for Environmental Studies', UGC, New Delhi

SEMESTER 4TH

MRSPTU BBA (AVIATION MANAGEMENT) SYLLABUS 2020 BATCH ONWARDS

RESEARCH METHODOLOGY

Subject Code: BBADS2-401

L	T	P	C
4	0	0	4

Duration: 60 Hrs.

Course Objectives:

The course aims at equipping students with an understanding of the

1. Research process
2. Tools and techniques in order to facilitate managerial decision making.

Course Outcomes:

After undergoing this subject, the student will be able to

1. Demonstrate knowledge of research processes (reading, evaluating, and developing);
2. Perform literature reviews using print and online databases;
3. Employ American psychological association (apa) formats for citations of print and electronic materials
4. Identify, explain, compare, and prepare the key elements of a Research proposal/report;

UNIT-I (15 Hours)

Research Methodology: Definition, Objectives, Role, and Scope in Management Research, Process of Research, Limitations & Types, And Research Design: Formulating the Research Problem, Choice of Research Design, Types of Research Design, and Sources of Experimental Errors.

UNIT-II (15 Hours)

Sampling: Advantages and Limitation of Sampling, Sampling process, Types of Sampling: Non-Probability Sampling Techniques, Probability Sampling Techniques, Sampling and Non Sampling Errors. Data Collection: Primary, Secondary Data Collection, Observation Methods and Survey Method:

UNIT-III (15 Hours)

Measurement Concept, Levels of Measurement—Nominal, Ordinal, Interval and Ratio Attitude Measurement: Comparative Scaling techniques, Non-comparative Scaling techniques, Questionnaire Designing: Types, Guidelines for developing a good questionnaire

UNIT-IV (15 Hours)

Data Preparation and Analysis: Editing, Coding, Cross Tabulation and Practices through Excel (Basic Concepts), Report Writing: Types of Research Reports, Guide lines for Writing a Report, Report Format, Guidelines for evaluating a report.

Suggestive Readings

1. C.R. Kothari, 'Research Methodology', New Age International Publishers.
2. K.V. Rao, 'Research Methodology', Sterling Publishers.
3. Srivastava and Rego, 'Business Research Methodology', Tata McGraw Hill.
4. Rajinder Nargundhkar, 'Marketing Research', Tata McGraw Hill.
5. Cooper and Schindler, Business Research Methods, Tata McGraw Hill.

MRSPTU BBA (AVIATION MANAGEMENT) SYLLABUS 2020 BATCH ONWARDS

FINANCIAL MANAGEMENT

Subject Code: BBADS2-402

L T P C
4 0 0 4

Duration: 60 Hrs.

Course Objectives:

1. The objective is to enable students to understand the basic concepts of Financial Management.
2. The role of Financial Management in decision-making.

Course Outcomes:

1. Meaning of Finance, Finance Functions, Organization structure of finance.
2. Role of a Financial Manager, Financial Planning, Steps in Financial Planning.
3. Concept of Valuation, Valuation of Bonds & Debentures.
4. Financing Decisions and Investment Decisions.

UNIT-I (16 Hours)

Introduction To Financial Management: Introduction – Meaning of Finance – Business Finance – Finance Function – Aims of Finance Function – Organization structure of finance – Financial Management – Goals of Financial Management – Financial Decisions – Role of a Financial Manager – Financial Planning – Steps in Financial Planning – Principles of a Sound Financial Planning.

UNIT-II (14 Hours)

Time Value Of Money : Introduction – Meaning & Definition – Need – Future Value (Single Flow – Uneven Flow & Annuity) – Present Value (Single Flow – Uneven Flow & Annuity) – Doubling Period – Concept of Valuation – Valuation of Bonds & Debentures – Preference Shares – Equity Shares – Simple Problems.

UNIT-III (15 Hours)

Capital Structure and Financing Decision: Financing Decisions: Introduction – Meaning of Capital Structure – Factors influencing Capital Structure – Optimum Capital Structure – EBIT – EBT – EPS – Analysis – Leverages – Types of Leverages.

UNIT-IV (15 Hours)

Investment Decision And Dividend Decision: Investment Decisions: Introduction – Meaning and Definition of Capital Budgeting – Features – Significance – Process – Techniques – Payback Period – Accounting Rate of Return – Net Present Value – Internal Rate of Return – Profitability Index - Simple Problems

Introduction – Meaning and Definition – Determinants of Dividend Policy – Types of Dividends – Provisions under Companies Act in relation to dividends.

Suggestive Readings

1. Rajesh Kumar V and Nagaraju Y, Financial Management, McGraw Hill
2. Reddy, Appanani: Financial Management., HPH
3. Sudrashan Reddy – Financial Management, HPH.
4. S N Maheshwari, Financial Management., Sultan Chand.
5. R.M. Srivastava : Financial Management – Management and Policy, Himalaya Publishers.
6. Khan and Jain, Financial Management, Tata McGraw Hill.

MRSPTU BBA (AVIATION MANAGEMENT) SYLLABUS 2020 BATCH ONWARDS

TRAVEL AND TOURISM MANAGEMENT

Subject Code: BBADS2-403

L T P C
4 0 0 4

Duration: 60 Hrs.

Course Objectives:

1. To enable the students to learn the basics of Airlines.
2. Introduction to Travel & Tourism Aspects.

Course Outcomes:

1. Introduction to Airline Travel, Air Taxi Operations.
2. Security Check, Hand Baggage Screening, Personal Frisking.
3. Passport, Visa, TIM, Currency Regulations.
4. Introduction to tourism, Discover India, Government Regulations on Tourism Management.

UNIT-I (14 Hours)

Introduction To Airline Travel: Introduction to Airline Travel – Airline Tourism- Air Taxi Operations- Private Operation- Airport Handling Functions of IATA-ICAO - Aims and Objectives. IATA Geography and Global indicators

UNIT-II (15 Hours)

Airlines Terminal Management: Airline Operational Management- Domestic- International Departure Formalities, Security Check- In. Hand Baggage Screening, Personal Frisking- Boarding the Plane, Ground Announcements Handling of Delayed Flight- Disruptive Flights, Ramp Handling & Ramp Safety- Procedure .

UNIT-III (15 Hours)

Travel Documents: Passport – Visa- TIM- Currency Regulations- IATA Rate of Exchange Banker's Buying Rate- Banker's selling Rate- Currency Conversion Departure Control System- ATC.

UNIT-IV (16 Hours)

Tourism Management : Introduction to tourism- airline tourism- Medical Tourism- Eco Tourism- Cultural Tourism- Adventure Tourism- Business Tourism- Sustainable Tourism- Religious Tourism- Sports Tourism -Types of Domestic and International Tourism- Discover India- Government Regulations on Tourism Management. Exploring new Destinations- Foreign Currency Earner.

Suggestive Readings

1. IATA Manual on Diploma in Travel & Tourism Management
2. ICAO Manuals

MRSPTU BBA (AVIATION MANAGEMENT) SYLLABUS 2020 BATCH ONWARDS

LOGISTIC AND AIR CARGO MANAGEMENT

Subject Code: BBADS2-404

L T P C
4 0 0 4

Duration: 60 Hrs.

Course Objectives:

1. To enable the students to acquire the knowledge of Logistics and Cargo.
2. To make the students learn about International Documentation, Strategy Formulation & Implementation of Global Supply Chain.

Course Outcomes:

1. Components, Advantage & Growth-Logistics in Global Organisation Marketing
2. Model of Inventory Management – MRP, DRP & JIT
3. Role of Warehouse, Alternative Warehousing
4. Aircraft Handling with Cargo, Cargo Terminals and Facilities

UNIT-I (15 Hours)

Concept Of Logistics Introduction : Components, Advantage & Growth-Logistics in Global Organisation Marketing and Logistics Channel – Environmental and Marketing Issue
Inventory Management- Purpose, Type, Objective and Cost- Model of Inventory Management – MRP, DRP & JIT

UNIT-II (14 Hours)

Transport System Model And Warehousing Deregulation And Government Rule: Transport Security Product Packaging and Pricing – Role of Warehouse – Alternative Warehousing Trend in Material Handling – Inbound Logistics and Purchasing.

UNIT-III (15 Hours)

Global Environment & Strategy Global Supply Chain: International Documentation- Strategy Formulation & Implementation Quality Concept & TQM – Improving Logistics Performance.

UNIT-IV (16 Hours)

Air Cargo Concept Introduction: Operations and Industry Regulations – Service Function, Organisation and Liability – SLI, Types of cargo- Handling of Perishable, Valuable Cargo and Special Cargo. Air cargo Tariff, Rates & Charges – Valuation charges and Disbursement Airway Bill, Function, Purpose and Validation

HANDLING FACILITY AIRPORT CARGO ACTIVITY & CARGO ZONE

Aircraft Handling with Cargo. Cargo Terminals and Facilities. Emerging trend in Cargo & Cargo Carriers.

Suggestive Readings

1. Kent Gourdin, —Global Logistics Management, Wiley Blackwell
2. Lambert, — Strategic Logistic Management, Academic Int Publisher
3. Alan Rushton & John Oxley, —Hand Book of Logistic and Distribution, Kogan Page
4. John F Magee & William C Copalino, —Modern Logistics Management, John Wiley & Sons
5. Paul R. Murphy, Jr and Donald F. Wood, —Contemporary Logistics, Prentice Hall, 9th edition, 2008

MRSPTU BBA (AVIATION MANAGEMENT) SYLLABUS 2020 BATCH ONWARDS

BUSINESS REGULATIONS

Subject Code: BBADS2-405

L	T	P	C
4	0	0	4

Duration: 60Hrs.

Course Objectives:

1. To enable the students to acquire knowledge of legal aspects of business Objective
2. On successful completion of this course, the students should have understood Law of contract, Law of sale of goods Law of Agency, Negotiable Instruments Act,

Course Outcomes:

1. Contracts ,Essentials of Contract ,Agreements ,Void ,voidable and illegal contracts
2. Misrepresentation ,fraud ,mistake of law and mistake of fact
3. Unlawful and illegal agreements , Effects of illegality
4. Sale and agreement to sell , Documents of title to goods ,conditions and warranties.

UNIT-I(16 Hours)

Law Of Contract : Contracts - Essentials of Contract - Agreements - Void - voidable and illegal contracts - Express and implied Contracts - Executed and Executory Contracts - Absolute and contingent contracts - Offer - Legal rules as to offer as to offer and lapse of offer - Acceptance - and rules as to acceptance - to create legal relation - Capacity of parties to create contract - Consideration - Legal rules as to Consideration - Stranger to a Contract and exceptions - Contract without consideration - Consent - Coercion - undue influence - misrepresentation - fraud - mistake of law and mistake of fact.

UNIT-II(14 Hours)

Legality of Object: Unlawful and illegal agreements - Effects of illegality – Wagering Agreements - Agreement opposed to public policy - Agreements in Restraint of trade – Exceptions – void agreements - Restitution - Quasi-contracts - Discharge of contract - Breach of contract - Remedies for breach of Contract.

UNIT-III(15 Hours)

Law of Sale of Goods: Formation of contract of sale - Sale and agreement to sell – Hire purchase agreement - Sale and bailment - Capacity to buy and sell - Subject matter of contract of sale – Effect of destruction of goods - Documents of title to goods - conditions and warranties - Rules of Caveat - Emptor - Exceptions - Transfer of property - Goods sent on approval - FOB, CIF, FOR and Ex-ship contracts of sale - Sale by non - owners - right of lien - termination of lien - right of resale - right of stoppage in transit - Unpaid Vendor's rights.

UNIT-IV (15 Hours)

Negotiable Instruments Act 1881: Negotiable Instruments - Characteristics – cheque - Essentials Requirements - Endorsements - Kinds - Crossing - Types - Demand Draft - Bills of Exchange

Suggestive Readings

1. N.D. Kapoor - Elements of Mercantile Law
2. Shukla M.C. - A Manual of Mercantile Law
3. Venkatesan - Hand Book of Mercantile Law
4. Pandia R. H. - Mercantile Law
5. K.P. Kandasami - Banking Law & Practices

Total Credits = 22

SEMESTER 1 st		Contact Hrs.			Marks			Credits
Subject Code	Subject Name	L	T	P	Int.	Ext.	Total	
BJMCS1-101	Introduction to Communication	4	-	-	40	60	100	4
BJMCS1-102	Growth and Development of Media	4	-	-	40	60	100	4
BJMCS1-103	Basics of Reporting and Editing	4	-	-	40	60	100	4
BJMCS1-104	Introduction to Mass Media	4	-	-	40	60	100	4
BJMCS1-105	Computer Fundamentals	3	-	-	40	60	100	3
BHSMC0-001	English	3	-	-	40	60	100	3
Total		-	-	-	240	360	600	22

Total Contact Hours= 25

Total Marks=600

Total Credits = 23

SEMESTER 2 nd		Contact Hrs			Marks			Credits
Subject Code	Subject Name	L	T	P	Int.	Ext.	Total	
BJMCS1-201	Media and Society	4	-	-	40	60	100	4
BJMCS1-202	Media and Democracy	4	-	-	40	60	100	4
BJMCS1-203	Print Journalism	4	-	-	40	60	100	4
BJMCS1-204	Introduction to Electronic Media	4	-	-	40	60	100	4
BJMCS1-205	Indian Entertainment and Media Sector	4	-	-	40	60	100	4
BJMCS1-206	Communication Skills	3	-	-	40	60	100	3
BMNCC0-004	Drug Abuse: Problem, Management and Prevention	2	-	-	S/ NS *	-	-	(S/NS)*
Total		-	-	-	240	360	600	23

Overall

Semester	Marks	Credits
1 st	600	21
2 nd	600	23
Total	1200	44

FIRST SEMESTER SYLLABUS

INTRODUCTION TO COMMUNICATION

Subject Code: BJMCS1-101

L T P C
4 0 0 4

Duration: 60 Hrs

Learning Objectives: This course aims to make the students conversant with various models and theories of communication. To help them improve their quality of communication by making effective use of media and emphasizing the need to pay attention to all elements involved in the process for empathic conveyance of messages.

Course Outcomes: After completing the course student will be able to understand and explain the concept of communication. It will equip students with the effective communication skills that are essentials of a journalism and mass communication. They will Gain knowledge of various types and theories of the communication and incorporate them for the effective communication process.

UNIT-I (15 Hrs)

Introduction to communication: Definition concept, process and elements of communication, Evolution of human beings and human communication, Role, scope and need of communication in society, Cis of communication, Functions, and objectives of communication Barriers in communication.

UNIT-II (15 Hrs)

Kinds of communication: Principles of communication, Socialization and communication, Traditional communication forms Verbal communication, Non-verbal communication.

UNIT-III (15 Hrs)

Types of communication: Communication in ancient civilizations, Intra-personal, interpersonal, Group, Public and mass communication, Machine to man, man to machine, machine to machine and mediated communication Spiritual communication, Press of de mass fictions

UNIT-IV (15 Hrs)

Different models and theories of communication: Aristotle, Osgood, Dance, New comb, Harold Lasswell, George Gerbner, Schramm, Meaning theory, Relational theory, Transactional theory, Two step flow theory, Bullet theory

Recommended Books

1. Everett M. Rogers, (1976), Communication and Development. Beverly Hills, Sage Publications.
2. E.S. Herman & Noam Chomsky, (1994), Manufacturing Consent, Vintage Stephen Robbins & Mary Coulter, 'Management', Pearson Education
3. McQuail, Denis (ed.), (1976), Sociology of Mass Communication. Penguin, London
4. Rogers, Evertt M. (ed), (1982), Communication & Development. SAGE, Beverly Hills
5. McQuail, Denis, (1994), Mass Communication Theory, SAGE, London

GROWTH AND DEVELOPMENT OF MEDIA

Subject Code: BJMCS1-102

L T P C
4 0 0 4

Duration: 60 Hrs

Learning Objectives: The course aims to provide an understanding the characteristics of media industry in India by providing an overview of the contemporary scenario and tracing the landmark events that have helped to shape it. The discussion travels through the history of media industries in UK, USA and India.

Course outcomes: After studying this course the students will equip with ability to Identify, explore the early evolution of media and various contemporary Medias. Incorporate Medias for the smooth mass communication across the world.

UNIT-I (15 Hrs)

Overview of contemporary media: Overview of the Contemporary Media Industry in India, Characteristics of Folk & Print Media, Characteristics of Radio, TV & Cinema, Characteristics of New Media

UNIT-II (15 Hrs)

Evolution of early newspapers: Brief introduction of the evolution of early newspapers in UK & USA, Early restrictions on press (with discussion on Aeropagitica), Rise of new publications, growth of newspaper industry in UK, Colonial newspapers, American Revolution & Role of press, Party Press, Penny Press, Civil War Journalism and New Journalism

UNIT-III (15 Hrs)

History of press: Introduction to history of Press in India, The forerunners: Hicky and Buckingham, Stage I: Early restrictions, Stage II: Rise of nationalist press, Vernacular Press Act and other restrictions, Stage III : Assertive role of press in post-independent India

UNIT-IV (15 Hrs)

Evolution of radio, new media: Origin and Evolution of Radio, Origin and Evolution of Television, Origin and Evolution of Advertising & Public Relations, Origin and Evolution of New Media

Recommended Books

1. Applegate, E. (1998), Personalities and Products: A historical perspective on Advertising in America
2. Barns, Margarita, (1940), Indian Press, George Allen & Unwin, London.
3. Bazlogova, Elena (2011) The listener's voice: Early radio and the American Public, University of Pennsylvania Press
4. Cheney, William, (1955), Freedom of the Press, Harcourt-Brace, New York.
5. Cutlip Scott M., (1995) Public Relations History: From the 17th to the 20th Century: The Antecedents (Routledge Communication Series) 1st Edition

BASICS OF REPORTING AND EDITING

Subject Code: BJMCS1-103

L T P C
4 0 0 4

Duration: 60 Hrs

Learning Objective: This course aims to acquaint the students with the nuances of reporting and editing. They will also grasp the skills required to cover and edit news. They will also understand the contemporary trends and issues in news reporting.

Course outcomes: This paper will enhance the basic understanding of the student about reporting and editing for the print media. This paper will give them the opportunity to learn the basic terminologies of print media with special emphasis on reporting.

UNIT-I (15 Hrs)

Covering news: Covering news Reporter- role, functions and qualities working on a beat; news agency reporting. Covering speeches, meetings and press conferences covering of beats- crime, courts, city reporting, health, education, sports.

UNIT-II (15 Hrs)

Interviewing/Types of news leads Interviewing: doing the research, setting up the interview, conducting the interview News leads/intros, Structure of the news story–inverted pyramid style; Lead: importance, types of lead; body of the story; attribution, verification Articles, features, types of features and human-interest stories, leads for features, difference between articles and features

UNIT-III (15 Hrs)

The Newspaper newsroom Newsroom, Organizational setup of a newspaper, Editorial department Introduction to editing: Principles of editing, headlines; importance, functions of headlines, typography and style, language, types of headline, style sheet, importance of pictures, selection of news pictures Role of sub/copy-editor, News editor and editor, chief of bureau, correspondents Editorial page: structure, purpose, edits, middles, letters to the editor, special articles, light leader, Opinion pieces, op ed page

UNIT-IV (15 Hrs)

Issues and trends in reporting: Issues and trends in news reporting Tabloids, Issues of sensationalism and voyeurism Neighborhood newspapers Supplements, Backgrounders Columns /columnists

Understanding media and news Sociology of news: factors affecting news treatment, paid news, agenda setting, pressures in the newsroom, trial by media, gatekeepers. Objectivity and politics of news Fake news Neutrality and bias in news Projects: Students will undertake assignments based on covering the beats and writing reports / interviewing personalities and celebrities. Exercises and assignments on editing copies, writing headlines, writing features, structuring a dummy editorial page, writing editorials etc.

Recommended Books

1. The Art of Editing, Baskette and Scissors,
2. Allyn and Bacon Publication Dynamics of Journalism and Art of Editing
3. S.N. Chaturvedi, Cyber Tech Publications News Writing and Reporting for Today's Media
4. Bruce Itule and Douglas Anderson, McGraw Hill Publication the Newspaper's Handbook
5. Richard KeebleRoutledge Publication Principles of Editorial Writing MacDougall and Curtis Daniel '

INTRODUCTION TO MASS MEDIA

Subject Code: BJMCS1-104

L T P C

Duration: 60 Hrs

4 0 0 4

Learning Objectives: This course aims to acquaint the students with the growth and development of communication and media. The main objective of the course is to enable students to understand the role and importance of mass media in raising public awareness.

Course Outcomes: On completion of the course the student should be able to understand the importance, functions & scope of communication and media and describe the growth and development of communication and media. They will also be able to understand the periodic changes in the media.

UNIT-I (15 Hrs)

Communication & Media: Definition, meaning & concept. Different types of communication: Verbal and written, Scope and Process of Communication, Mass Communication: Concept & Characteristics.

UNIT-II (15 Hrs)

Mass Media: Meaning & Concept, Introduction to Indian Press, Brief account of the origin and development of newspaper and magazine in India 4. History of the development of electronic media in India: Radio & TV

UNIT-III (15 Hrs)

Functions and role of mass media: Role, objectives functions & achievements of Mass Media, Relation between Mass Media and Mass Culture and their development, Media as fourth pillar of democracy, Mass Media in Rural Urban divide.

UNIT-IV (15 Hrs)

Trends in mass communication: Changing trends of Mass Communication under the process of globalization, Private and Public Media, Technology in the development of Media Media and Market: Nature, Relation & Expansion

Recommended Books

1. Kumar, Kewal J Mass Communication in India, Jaico Books, New Delhi
2. J.S. Yadava&PradeepMathur Issues in Mass Communication: The Basic Concepts, Kanishka Publishers, Delhi, 2008
3. ShymaliBhattacharjee., Media and Mass Communication: An Introduction, Kanishka Publishers, Delhi, 2005

COMPUTER FUNDAMENTALS

Subject Code: BJMCS1-105

L T P C
4 0 0 4

Duration: 60 Hrs

Course Objectives

The aim of this subject is:

1. To gain and understanding of the core concepts and technologies which constitute Information Technology.
2. To be able to articulate and demonstrate a basic understanding of the fundamental concepts of Information Technology
3. To make understand how to use Office Tools.

Course Outcomes

After completing this course, students will be able to:

1. Understand the core concepts and technologies which constitute Information Technology.
2. Apply various computer concepts
3. Apply computer applications in taking the managerial decisions.

UNIT-I(16 Hrs)

Computer Fundamentals: Definition and Block diagram of a computer, Characteristics of Computers, Hardware Vs Software,

Generations of languages - Machine Language, Assembly Language, High Level Language, Assembler, Compiler and Interpreter. Input Devices & Output Devices.

Information Technology: Introduction to Information Systems, Application of IT in Business & Industry, Home, Education & Training, Entertainment & Arts, Science, Engineering and Math

UNIT-II (15 Hrs)

Memories: Primary Memory, Secondary Memory and Storage Devices, Creating Directory, Sub Directory, and Renaming, Coping and Deleting the Directory

Data Representation: Bit, Byte, Binary, Decimal, Hexadecimal, and Octal Systems, Conversions and Binary Arithmetic (Addition/ Subtraction/ Multiplication) Applications of IT.

Algorithm and Flowcharts Algorithm: Definition, Characteristics, Advantages and disadvantages, Examples Flowchart: Definition, Define symbols of flowchart, Advantages and disadvantages, Examples.

UNIT-III (15 Hrs)

File Manipulation: Creating a File, Deleting, Coping, Renaming File, Using Accessories such as Calculator, Paint Brush, CD player, etc

Computer Network & Communication: Network Types, Network topologies, Network Communication Devices, Physical Communication Media, Network Protocol (TCP/ IP)

UNIT-IV (14 Hrs)

Operating System Concept: Introduction to Operating System, Function of OS, Types of Operating Systems, Booting Procedure, Details of Basic System Configuration.

Computer Software: Types of Software, Application Software and System Software.

**Faculty members can take practical sessions during the lectures.*

Recommended Books

1. V. Rajaraman, 'Fundamentals of Computers', PHI
2. Satish Jain, 'Information Technology Concepts', BPB Publications
3. Turban, Mclean and Wetherbe, 'Information Technology for Management', John Wiley & Sons
4. Courter G, 'Mastering MS Office 2000 Professional', BPB Publication.
5. Steve Sagman, 'MS- Office 2000 For Windows', Addison Wesley.

ENGLISH

Subject Code: BHSMC0-001

L T P C
2 0 0 2

Duration: 30Hrs.

Course Objectives

The main aim of this course is:

1. To enlighten the students with the variety of word bank
2. To help the students to understand intricacies of grammar
3. To help the students to know writing skills

Course Outcomes

After Completing this course, students will be able to:

1. Adapt and apply learned skills
2. Be eloquent over language
3. Have proficiency in English skills.

UNIT-I (7Hrs.)

Vocabulary Building: The concept of Word Formation, Root words from foreign languages and their use in English, Acquaintance with prefixes and suffixes from foreign languages in English to form derivatives, Synonyms, antonyms, and standard abbreviations.

UNIT-II (9 Hrs.)

Basic Writing Skills: Sentence Structures; Use of phrases and clauses in sentences ; Importance of proper punctuation; Creating coherence; Organizing principles of paragraphs in documents; Techniques for writing precisely

UNIT-III (7 Hrs.)

Identifying Common Errors in writing: Subject-verb agreement; Noun-pronoun agreement; Misplaced modifiers; Articles; Prepositions; Redundancies; Clichés

UNIT-IV (7 Hrs.)

Nature and Style of sensible writing: Describing, Defining, Classifying, Providing examples or evidence, Writing introduction and conclusion

Writing Practices: Comprehension, Précis Writing Essay Writing

Recommended Books

1. Michael Swan, 'Practical English Usage', OUP, 1995.
2. F.T. Wood, 'Remedial English Grammar', Macmillan, 2007.
3. William Zinsser, 'On Writing Well', Harper Resource Book, 2001.
4. Liz Hamp-Lyons and Ben Heasley, 'Study Writing', Cambridge University Press, **2006.**
5. Sanjay Kumar and Pushp Lata, 'Communication Skills', Oxford University Press, 2011.
6. 'Exercises in Spoken English', Parts. I-III. CIEFL, Hyderabad. Oxford University Press.

SECOND SEMESTER SYLLABUS

MEDIA AND SOCIETY

Subject Code: BJMCS1-201

L T P C
4 0 0 4

Duration: 60 Hrs

Learning Objectives: To make students aware of contemporary media development and challenges in India and to help students develop the capability to assess, criticize and appreciate the role of media in fulfilling the aspirations of people.

Course Outcomes: After completing the course student will be able to learn the concepts related to media development and its role in society while fulfilling its aspirations.

UNIT-I (15 Hrs)

Mass media and society: Importance of media, critical analysis of the role of media, media impact on society, social responsibility of media.

UNIT-II (15 Hrs)

Media and democracy: public sphere, Freedom of speech and expression, Right to information, Right to privacy and media as a watchdog.

UNIT-III (15 Hrs)

Mass media and public interest: A critical study of media, Analysis of media contents, its role in serving public; marginalized groups. Role of media in social movements: political – cultural movements, national integration, communal harmony.

UNIT-IV (15 Hrs)

Ownership of media, content – control, Internal and external threats, pressures on media – media regulations, issues of social class, poverty, development, and public health.

Media credibility: factors affecting media credibility, contemporary issues, media performance and its role, critical analysis of media credibility:

Recommended Books

1. Media and culture an introduction to mass communication - Richard Campbell
2. Mass media issues analysis and debate – George Oddman
3. Media and Democracy in Asia x- An AMIC compilation, 2000
4. Dynamics of mass communication: Media in Transition - Joseph Dominick
5. Conflict sensitive journalism - Ross Howard
6. Media power in politics - Graber, Doris. 1980
7. Media and Society - Arthur Asa

MEDIA AND DEMOCRACY

Subject Code: BJMCS1-202

L T P C
4 0 0 4

Duration: 60 Hrs

Learning Objectives: This course is designed to give students a comprehensive view of communication, its scope and importance in journalism, the role of communication in establishing a favorable image of the organization. The aim is to develop students' ability to communicate correctly and effectively on matters having relevance to day-to-day operations. This course will make student conversant with fundamentals of communication, help them honing oral, written, and non-verbal communication skills and to transform their communication abilities.

Course Outcomes: After completing the course student will be able to understand and explain the concept media and making of democracy. It will also highlight the role of politics in media and journalism.

UNIT-I (15 Hrs)

Media and the Making of Democracy: emergence of the Nation State, Subject and Citizen, Information as entitlement, Media & Secularisation, Secular Education, Secularisation of Entertainment Media & The Public Sphere, From Masses to Audience & Creation of Public Opinion, Publicness & Privacy, Media Pluralism, Diversity of content, Diversity of media ownership

UNIT-II (15 Hrs)

Ideology, Power, Media: Characterising Ideology, Consensus as ideology and Consent as Hegemony, Analyzing Power, Pluralist constructs of power, Critical approaches to power State & Information, Propaganda & Publicity, information as Public Good, Media Imperialism, Sovereignty & Public diplomacy, Information imbalance

UNIT-III (15 Hrs)

Democracy in Transition: Democracy in Transition Democracy in Transition State & Governmentality, Decentralization & deregulation, Participatory Democracy, Mediated Politics, From Scarcity to Abundance

UNIT-IV (15 Hrs)

New Media: New media and politics Cyber Democracy, Democracy & Trust, Democratic Discourse & New Technologies, Media & Democratization, Role of Stakeholders, Self-Regulation

Recommended Books

1. Media and democracy by Jamescurran
2. Journalism, Democracy, and civil society in India.

PRINT JOURNALISM

Subject Code: BJMCS1-203

L T P C
4 0 0 4

Duration: 60 Hrs

Learning Objectives: In this paper students will be provided a holistic training in sourcing, writing, editing, and designing of content for newspapers & magazines in a multimedia convergent environment

Course Outcomes: After completing the course student will get to know about the concept of journalism and importance of editing.

UNIT-I (15 Hrs)

Journalism: Concept and definition, News: Definition, Concept, Elements, Values, Sources, News Story Structure (5 Ws and 1 H), Inverted Pyramid Pattern; Lead: definition and types, Spots and Specials: Journalism in a multimedia convergent environment

UNIT-II (15Hrs)

Creative Non-fiction terminologies: Joseph Pulitzer's New Journalism, Literary Journalism, Narrative Journalism, Immersive Journalism and Lifestyle Journalism, Purpose and types; importance in a multimedia, convergent environment

Idea generation: strategies for Lateral Thinking; importance of research,

Organization & Composition: types of story structure; ensuring audience engagement through sensory detailing, figurative language, human interest, humour, dialogue & character

UNIT-III (15 Hrs)

Importance of Editing; Qualities and responsibilities of Sub-Editor, Chief Sub-Editor and News Editor, Editing for precision, accuracy, clarity, brevity, spelling, punctuation, and grammar,

Headlines: Significance and functions, typographical patterns of writing headlines, Do's and Don'ts of headline writing, headline schedule, Copy marking and editing symbols; Selection, editing cropping of picture

UNIT-IV (15 Hrs)

Definition and importance of Graphic Design in communication and branding, Elements and vocabulary of design, Typography: classification, legibility & appropriateness, text breakers, Principles of Design: Balance, contrast, motion, focus, unity & harmony; types of layouts and page make-up; use of design software

Recommended Books

1. Anton, K.K & Cruise, J. (2009), Quark Xpress: Essential Skills for Page Layout and Web Design, Peachpit Press, CA
2. De Bono, E. (1990) Lateral Thinking: A Textbook of Creativity. London: Penguin Books
3. Filak, Vincent F.(2018), Dynamics of News Reporting and Writing: Foundational Skills for a
4. Digital Age, Sage Publications Hohenberg, John, (January 1983), The Professional Journalist, (Holt, Rinehart and Winston, London)
5. Ludwig, Mark D., (2005), Modern News Editing, Willy Blackwell, New York

INTRODUCTION TO ELECTRONIC MEDIA

Subject Code: BJMCS1-204

L T P C
4 0 0 4

Duration: 60 Hrs

Learning Objectives: This course is designed to give students different forms of electronic media. The aim is to make students' acquainted to basics of visual, radio, sound and newspapers.

Course Outcomes: Define basics of various electronic media and describe the characteristics of various forms of electronic media

UNIT-I (15 Hrs)

Basics of Sound Concepts of sound: scape, sound culture Types of sound-Sync, Non-Sync, Natural sound, Ambience Sound Design-Its Meaning with examples from different forms Sound recording techniques Introduction to microphones Characteristics of Radio as a medium

Basics of Visual: What is an image, electronic image, television image Digital image, Edited Image (politics of an image) What is a visual? (still to moving) Visual Culture Changing ecology of images today Characteristics of Television as a medium

UNIT-II (15 Hrs)

Writing and Editing Radio News: Elements of a Radio News Story, Gathering, Writing/Reporting. Elements of a Radio News Bulletins Working in a Radio Newsroom Introduction to Recording and editing sound. (Editing news-based capsule only).

UNIT-III (15 Hrs)

Writing and Editing Television News Basics of a Camera- (Lens & accessories) Electronic News Gathering (ENG) & Electronic field Production (EFP) (Concept) Visual Grammar – Camera Movement, Types of Shots, Focusing, Visual Perspective. Elements of a Television News Story: Gathering, Writing/Reporting. Elements of a Television News Bulletins Basics of Editing for TV Basic Soft-wares and Techniques (for editing a news capsule).

UNIT-IV (15 Hrs)

Broadcast News: Critical Issues and Debates Public Service Broadcasters - AIR and DD News - Voice of India? (Analysis of News on National Broadcasters) Changing Character of Television News (24hrs news format, News Production cycle, News 'Lingo', News 'Formulae' ? News as Event, Performance and Construction.

Recommended Books

1. Stefen Prince, Movies and Meaning: An Introduction to Film, Allyn, and Bacon. London, 1997
2. Chatterjee P.C., Broadcasting in India, Sage, New Delhi, 1990.
3. Kumar J. Keval, Mass communication in India, Jaico Publishing House, Bombay, (New Ed.)
4. A Manual for New Agency Reporters. IIMC, New Delhi, allied publishers Pvt. Ltd., New Delhi.

INDIAN ENTERTAINMENT AND MEDIA SECTOR

Subject Code: BJMCS1-205

L T P C
4 0 0 4

Duration: 60 Hrs

Learning Objectives: This course is designed to give students a scenario of Indian entertainment and media sector. It will also make the students to get know about the emerging trends in this sector and targeted growth in coming years.

Course Outcomes: After completing the course student will be able to define and explain the scope of entertainment industry and the history of entertainment of the industry

UNIT-I (15 Hrs)

Defining the scope: What is Media and entertainment industry? Overarching structure, Size and growth prospective, Broader emerging trends

UNIT-II (15 Hrs)

Print industry: Overview of print industry, Print industry and its constituents, Historical development of print media (regional and national perspectives), Print media: Market size and growth trajectory f Emerging trends

UNIT-III (15 Hrs)

Overview of Television industry: History and development of Television industry Milestones of regional and national level, Television industry: Market size and growth trajectory f Emerging trends

UNIT-IV (15 Hrs)

Overview of film industry: History and development of film industry, Milestones of regional and national level Film industry: Market size and growth trajectory, Emerging trends

Recommended Books

1. Athique, A. (2012). Indian media. Polity.
2. Kohli-Khandekar, V. (2008). The Indian media business. SAGE Publications India.
3. Kumar, K. J. (2000). Mass communication in India (Vol. 741). Jaico publishing house.
4. Munshi, S. (2012). Remote control: Indian television in the new

COMMUNICATION SKILLS

Subject Code: BJMCS1-206

L T P C
3 0 0 3

Duration: 45 Hrs

Course Objectives

The main aim of this course is:

1. To provide fundamental knowledge and exposure to the concepts, theories and practices in the field of communications.
2. To make student conversant with the basic forms, formats and techniques of business communications.
3. To give student the exposure of all relevant communicational theories so that they become a highly confident and skilled writer.

Course Outcomes

After completing this course, students will be able to:

1. Apply appropriate communication skills in business activities
2. Apply communication skills across settings, purposes, and audiences, demonstrate knowledge of communication theory and application.

UNIT-I (10Hrs)

Communication: Its Meaning & Importance, Barriers to Effective Communication, Types of Communication – Verbal and Non- Verbal Communication

Basic Model of Communication: History of Communication Theory, Shannon and Wavers' Model of Communication, Encoding and Decoding, Feedback and Noise, Essentials of Effective Business Communication – 7 C's of Communication.

UNIT-II (10 Hrs)

Basic Parts of Speech: Noun, Pronoun, Verb, Adjective, Adverb, Preposition, Article

Tenses: Introduction, Uses of Present, Past and Future Tense, Use of Prepositions Conjunctions and Interjections. Use of Punctuations

Presentation: Oral Presentation, Just-A-Minute Presentation, Individual/Group Presentations

UNIT-III (12 Hrs)

Sentences: Affirmative and Negative Interrogative and Assertive, Degree of Comparison, Conversation, Direct and Indirect Speech.

Correct Word Usage – Homonyms, Antonyms and Synonyms

UNIT-IV (13 Hrs)

Letter Writing: Need, Functions and Kinds, Layout of Letter Writing, Types of **Letter Writing:** Formal, Semi-Formal and Informal. Circulars, Agenda, Notice, Memorandums, Office orders, Press notes

Business Etiquettes: Email and Net Etiquettes, Etiquette of the Written Word, Etiquettes on the Telephone, Handling Business Meetings.

**Faculty members can take practical sessions during the lectures.*

Recommended Books

1. Boove, Thill, Chaturvedi, 'Business Communication Today', Pearson Education
2. Murphy and Hildebrandt, 'Effective Business Communication', Tata McGraw Hill Education.
3. Krizan, Buddy, Merrier, 'Effective Business Communication', Cengage Learning
4. S. J McGraw, 'Basic Managerial Skills for All', Prentice Hall of India.
5. Wren & Martin, 'English Grammar and Composition', Sultan Chand & Sons.
6. Lesikar, 'Business Communication: Making Connections in a Digital World', McGraw Hill
7. S C Sharma, Shiv N. Bhardwaj, 'A Textbook of Grammar and Composition', Jawahar Book Centre

DRUG ABUSE: PROBLEM, MANAGEMENT AND PREVENTION

Subject Code: BMNCC0-004

L T P C
2 0 0 0

Duration: 30 Hrs.

Course Objectives

The main aim of this course is:

1. To aware students about Consequences of Drug Abuse
2. To aware students about preventions of Drug Abuse
3. To aware various roles of society to prevent drug abuse

Course Outcomes

After completing this course, Students will be able to:

1. Understand the responsibilities of society and family to prevent Drug Abuse
2. Understand the role of educational institutes in controlling Drug Abuse
3. Aware about various Psychological and Social management of Drug abuse
4. Understand the role of Media and Legislation to control the drug abuse.

UNIT-I (6 Hrs.)

Meaning of Drug Abuse: Meaning: Drug abuse, Drug dependence and Drug addiction. Nature and extent of drug abuse in India and Punjab.

UNIT-II (8 Hrs.)

Consequences of Drug Abuse

Individual: Education, Employment, Income. Family: Violence.

Society: Crime.

Nation: Law and Order problem.

UNIT-III (8 Hrs.)

Prevention of Drug Abuse

Role of Family: Parent-child relationship, Family support, supervision, shipping values, active scrutiny.

School: Counselling, Teacher as role-model, Parent-teacher-health professional coordination, Random testing on students.

UNIT-IV (8 Hrs.)

Treatment and Control of Drug Abuse

Medical Management: Medication for treatment and to reduce withdrawal effects.

Psychological Management: Counselling, Behavioural and Cognitive therapy.

Social Management: Family, Group therapy and Environmental intervention. Treatment: Medical, Psychological and Social Management.

Control: Role of Media and Legislation.

Recommended Books

1. Ram Ahuja, 'Social Problems in India', Rawat Publications, Jaipur,
2. 'Extent, Pattern and Trend of Drug Use in India', Ministry of Social Justice and Empowerment, Govt. of India,
3. J.A. Inciardi, 'The Drug Crime Connection', Sage Publications, Beverly Hills,
4. T. Kapoor, 'Drug Epidemic among Indian Youth', Mittal Publications, New Delhi,
5. Kessel, Neil and Henry Walton, 'Alcoholism, Harmond Worth', Penguin Books,
6. Ishwar Modi and Shalini Modi, 'Addiction and Prevention', Rawat Publications, Jaipur,

7. 'National Household Survey of Alcohol and Drug Abuse', Clinical Epidemiological Unit, All India Institute of Medical Sciences, New Delhi,
8. Ross Coomber and Others, 'Key Concept in Drugs and Society', Sage Publications, New Delhi,

MRSPTU

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2018 BATCH ONWARDS**

(7th SEMESTER)

Course		Contact Hrs.			Marks			Credits
Code	Name	L	T	P	Int	Ext.	Total	
BANES1-701	Avionics	3	0	0	40	60	100	3
BANES1-702	Aircraft design	3	1	0	40	60	100	4
BANES1-703	Project-I	0	0	8	60	40	100	4
BANES1-704	Training-III***	-	-	-	-	-	-	3
BANES1-705	Rockets and Missiles (Compulsory)	3	1	0	40	60	100	4
	Departmental Elective-IV (POOL-I, Select One)	3	1	0	40	60	100	4
BANED1-711	Jet Propulsion							
BANED1-712	Rocket Propulsion							
	Departmental Elective-V (POOL-II, Select One)	3	0	0	40	60	100	3
BANED1-721	Air Transportation and Operation							
BANED1-722	Aircraft Composite Material							
BANED1-723	Aircraft Modelling and Simulation							
XXXX	Open Elective**	3	0	0	40	60	100	3
	Flying Hour*	-	-	-	-	-	-	-
Total		-	-	-	300	400	700	28

Project-I: Mini Project for UG students to enable them apply knowledge to address the real-world situations/problems to find solutions. The students will carry out project under the supervision of PSAEC faculty advisor. A group of maximum two (02) can register for one project. The registered students will submit the project proposal in the prescribed format in the office of HOD within 10 days of semester registration. Faculty advisor of the group has to accept/reject proposal based on the merits and outcome of the project. The students will require to develop and present a working prototype at the end of the semester to earn the credits of project.

If the students are not able to develop the working prototype, they will not be able to earn the credits and they will have to repeat the course in the form of new project.

***Note: Students will given an opportunity to avail flying hours at Punjab State Civil Aviation Council Airstrip by paying additional charges. Minimum 02 Hrs Flying is compulsory for each student. However students are interested in more flying hours can avail maximum 04 Hrs Flying by paying additional charges and as per availability of Aircraft and Pilot with Punjab State Civil Aviation Council.**

****Open Elective Subjects may also be chosen from the list of Open Electives-I, II and III offered by other departments of university.**

*****Internship will be imparted at the end of 6th semester as per AICTE Internship Policy.**

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2018 BATCH ONWARDS**

(8th SEMESTER)

Course		Contact Hrs.			Marks			Credits
Code	Name	L	T	P	Int	Ext.	Total	
	Departmental Elective-VI (POOL-I, Select One)	3	0	0	40	60	100	3
BANED1-811	Internet of Things (IoT)							
BANED1-812	Carbon Fiber Reinforced Polymer(CFRP)							
	Departmental Elective-VII (POOL-II, Select One)	3	1	0	40	60	100	4
BANED1-821	Boundary Layer Theory							
BANED1-822	Advanced Aerodynamics							
BANED1-823	Experimental Aerodynamics							
BANES1-801	Project-II	0	0	8	60	40	100	4
XXXX	Open Elective**	3	0	0	40	60	100	3
XXXX	Open Elective**	3	0	0	40	60	100	3
	Flying Hour*	-	-	-	-	-	-	-
Total		12	1	08	220	280	500	17

Project-II: Students can do Project-II either outside the institute or within the institute under a supervision of PSAEC Faculty advisor. A group of maximum two (02) students can register for the project-II. The registered students will submit the project proposal in the prescribed format in the office of HOD within 10 days of semester registration. Faculty advisor of the group has to accept/reject proposals based on the merits and outcome of the project.

***Note:** Students will given an opportunity to avail flying hours at Punjab State Civil Aviation Council Airstrip by paying additional charges. Minimum 02 Hrs Flying is compulsory for each student. However students are interested in more flying hours can avail maximum 04 Hrs Flying by paying additional charges and as per availability of Aircraft and Pilot with Punjab State Civil Aviation Council.

****Open Elective Subjects** may also be chosen from the list of Open Electives-I, II and III offered by other departments of university.

7th Semester

MRSPTU

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2018 BATCH ONWARDS**

AVIONICS

Subject Code –BANES1-701

**L T P Cr
3 0 0 3**

Duration:45 Hours

COURSE OBJECTIVES

- To enable the student to describe different types avionics systems of aircraft.
- The student should be able to apply Avionics verification and validation techniques.
- The student should be able to understand working of Communication and Navigation of aircraft.

LEARNING OUTCOMES

After undergoing the subject, student will be able to:

- Identify avionics System/subsystem requirements
- Compare the Military and Civil Avionics requirements
- Describe working principles of communication systems
- Describe working principles of navigation systems

UNIT –I (13 Hrs.)

Role of avionics: Role for Avionics in Civil and Military Aircraft systems, Avionics sub-systems and design, defining avionics System/subsystem requirements-importance of facilities, Avionics system architectures

Avionics system data buses, design and integration: MIL-STD-1553B, ARINC-429, ARINC-629, CSDB, AFDX and its Elements, Avionics system design, Development and integration-Use of simulation tools, stand alone and integrated Verification and Validation

UNIT –II (10 Hrs.)

Avionics system essentials: displays, i/o devices and power: Trends in display technology, Alphanumeric displays, character displays etc., Civil and Military aircraft cockpits, MFDs, MFK, HUD, HDD, HMD, DVI, HOTAS, Synthetic and enhanced vision, situation awareness, Panoramic/big picture display, virtual cockpit-Civil and Military Electrical Power requirement standards, comparing the Military and Civil Requirements and Tips for Power System Design

UNIT –III (10 Hrs.)

Communication systems: Fundamentals of radio wave propagation, antennas, transmission lines, communication, receiver and transmitter; Working principles of following systems: Very High Frequency (VHF) communication, High Frequency (HF) communication, Audio, Emergency Locator Transmitters, Cockpit Voice Recorder, ARINC communication and reporting

UNIT –IV (12 Hrs.)

Navigation systems: Fundamentals of Very High Frequency omnidirectional range (VOR); Automatic Direction Finding (ADF); Instrument Landing System (ILS); Microwave Landing System (MLS); Distance Measuring Equipment (DME);Radio altimeter, Very Low

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Frequency and hyperbolic navigation(VLF/Omega); Doppler navigation; Area navigation, RNAV systems; Flight Management Systems; Global Positioning System (GPS), Global Navigation Satellite Systems (GNSS); Inertial Navigation System; Air Traffic Control transponder, secondary surveillance radar; Traffic Alert and Collision Avoidance System(TCAS),Weather avoidance radar.

RECOMMENDED BOOKS

1. Digital Avionics Handbook, 3rd Edition, CRC Press, 2012
2. R P G Collinson, "Introduction to Avionics Systems", 3rd Edition, Springer, 2011
3. E.H.J. Pallett, "Micro Electronics Aircraft System", FT Prentice Hall,1984
4. Ian Moir and Allan Seabridge, "Aircraft Systems: Mechanical, Electrical and Avionics subsystem integration", 3rd edition, Wiley,2008.
5. Thomas K Eismin, "Aircraft Electricity and Electronics",7th Edition, McGraw-Hill Education,2019.

AIRCRAFT DESIGN

Subject Code –BANES1-702

**L T P Cr
3 1 0 4**

Duration:60 Hours

COURSE OBJECTIVES

- The course enables students to understand and apply various concepts related to aircraft design.
- The course enables students to conceptually design various types of aircrafts.

LEARNING OUTCOME

After undergoing the subject, the student will be able to:

- Analyze various concepts related to aircraft design.
- Estimate weight & geometrical parameters of different types of aircrafts.
- Analyze aerodynamic and stability characteristics during design of different types of aircrafts.
- Analyze and estimate performance parameters during aircraft design.
- Analyze and estimate structural aspects and apply in aircraft design.

UNIT – I (16 Hrs.)

Introduction: Aircraft design, Requirements and specifications, Airworthiness requirements, Importance of weight, Aerodynamic and structural design considerations, Classifications of airplane, Concept of configuration, Features of special purpose airplanes, unmanned aerial vehicles and their features, Control configured vehicles.

Weight Estimation and Wing Design: Estimation of airplane weight based on airplane type / mission and material used, Trends in wing loading and thrust loading, Iterative approach, Estimation of Horizontal and vertical tail volume ratios.

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2018 BATCH ONWARDS**

UNIT – II (14 Hrs.)

Symmetrical Maneuvering Loads: Classical methods of estimating symmetrical maneuvering loads on a wing in flight, Basic flight loading conditions, Load factor, V-n diagram, Gust loads, Estimation of gust loads, Gust envelope, Use of panel methods to estimate air load distribution on a wing.

Wing Design: Factors influencing selection of airfoil and plan form, Span wise air loads variation, Super critical wing, Stalling, take-off and landing considerations, BM and SF diagrams, Design principles of all metal, stressed skin wing (Civil & Military airplane), Estimation of wing drag.

UNIT – III (16 Hrs.)

Structural Integration: Structural layout of straight, tapered and swept (forward and aft) wings, Cockpit and passenger cabin layout, Layout of flight and engine controls, Wing-fuselage joining methods, All metal airplane considerations, Use of composite materials, Preparation of 3-views, CG location.

Undercarriage and Inlets: Requirement of undercarriage, Different arrangements, Mechanism for retraction into fuselage and wing, Absorption of landing loads, Calculations of loads, Number of engines, Types and location for inlets, Variable geometry inlets, Revised CG location.

UNIT – IV (14 Hrs.)

Complete Design Problem: Preparation of conceptual design of an airplane from given specifications, Use and analysis of existing designs for this purpose, Design of airframe for the specifications, Prediction of performance, stability and control, Relaxed stability, Selection of engines from all considerations with all details, Freezing the design, Preparation of preliminary drawings including 3 views and layout.

RECOMMENDED BOOKS

1. D. P. Raymer, "Aircraft Design: A Conceptual Approach", 5th Edition, AIAA Publication, 2012.
2. Darrol Stinton D., "The Design of the Aeroplane", 2nd Edition, Black Well Science, 2001.
3. J. D. Anderson Jr., "Aircraft Performance and Design", 3rd Edition, Tata McGraw-Hill, 2010.
4. L.M.Nikolai, "Fundamentals of Aircraft Design", Illustrated edition, American Institute of Aeronautics & Astronautics; 2010
5. John J. Bertin and Russell M. Cummings, "Aerodynamics for Engineers", 5th Edition, Pearson Prentice Hall;

**MRSPTU B.TECH. (AERONAUTICAL ENGINEERING) SYLLABUS
2018 BATCH ONWARDS**

ROCKETS & MISSILES

Subject Code –BANES1-705

**L T P Cr
3 1 0 4**

Duration:60 Hours

COURSE OBJECTIVES

Main objectives of this course are:

- Basic knowledge of rockets / missiles
- Guidance & navigation systems for missiles.
- Performance, stability & control of rockets and missiles including maneuvering flights
- Launch operations & Re-entry of space vehicles.

LEARNING OUTCOMES

After undergoing the subject, student will be able to:

- Describe different types of rockets and missiles.
- Differentiate between rockets and missiles.
- Calculate various stability aspects of various control configuration of space vehicles.
- Analyze problems related to launch and recovery of space vehicles.
- Predict various types of trajectories of space vehicles.

UNIT – I (14 Hrs.)

Introduction: Introduction to rockets and missiles, Difference between Rocket and missiles, Type of Rockets and missiles, satellites, satellite launch vehicles.

Aerodynamic Characteristics of Airframe Components: Bodies of revolution, Different fore-body shapes, Summary of characteristics of bodies of revolution, Base pressure, Aerodynamic control, Jet control, various subsystems of missile & rockets

UNIT – II (18 Hrs.)

Performance and Propulsion of Missiles and Rockets Introduction of drag, various types of drags, Boost glide trajectory, Graphical solution, Boost sustainer trajectory, staging & stage separation, long range cruise trajectory, long range ballistic trajectory, Powered and un-powered flight, Brief description of Fin Stabilized, spin stabilized Rockets and their force systems, ramjet, scramjet, rocket (liquid/solid fuel based) engines, Thrust misalignment.

Guidance, Control & Navigation of Missiles and Rockets Introduction to guidance and navigation, various types of guidance schemes & their application. Types of Control and actuation systems, navigation systems for high accuracy & its suitability

UNIT –III (16 Hrs.)

Stability and Control Longitudinal: Two degrees of freedom Analysis, Complete Missile Aerodynamics with forward and rear control, Static stability margin.

Directional: Introduction, cruciform configuration, Body wing and Tail contribution on

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directional control.

Lateral: Induced roll, internal control and design consideration for cruciform and Monowing, Damping in roll.

Maneuvering Flight: Introduction to maneuvering of missiles and rockets, Flat turn for cruciform and mono-wing, Pull-ups, Relationship of maneuverability and static stability margin.

UNIT IV (12 Hrs.)

Dynamic Stability: Equation of motion, longitudinal dynamic degree of freedom, classical solution, lateral dynamics.

Advanced topics: Launching problems, Re-entry and recovery of space vehicles, Modern Concepts, Manned Missions.

RECOMMENDED BOOKS

1. Howard S. Seifert, Ed. Wiley, "Space Technology", Chapman and Hall, London, 1959.
2. SR Mohan, "Fundamentals of Guided Missile", DRDO, 2016.
3. Design of Guidance and Control Systems for Tactical Missiles, 1st Edition, CRC Press 2019.
4. EL Fleeman, "Tactical Missile Design", 2nd Edition, AIAA Education Series, 2006.
5. EL Fleeman, "Missile Design and System Engineering", AIAA Education Series, 2013

JET PROPULSION

Subject Code –BANED1-711

L T P Cr

Duration:60 Hours

3 1 0 4

COURSE OBJECTIVES

- Make the students understand the flow dynamics of supersonic and compressible flows through compressor, combustion chamber, nozzles and turbine passages and flows involving heat transfer and frictional effects.
- The differences in the performance analysis of a turbine engine in ideal and real conditions are also discussed so that the students can appreciate the need to study both of these situations.

LEARNING OUTCOMES

After undergoing the subject, student will be able to:

- Describe compressible flows through compressor, combustion chamber, nozzles, and turbine passages.
- Analyze various types of engine cycles.
- Estimate the performance of centrifugal compressor and combustion chamber.
- Estimate the performance of axial flow compressor and turbine.

UNIT I (18 Hrs.)

Steady 1-Dimensional Gas Dynamics; Basics, simple flows: nozzle flow, nozzle design, nozzle operating characteristics for isentropic flow, nozzle flow and shock waves. Nozzle

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characteristics for some operational engines. Rayleigh flow and Fanno flow. Effect of frictional duct length in subsonic flow and supersonic flow, numerical problems in 1D flow. Principles of Supersonic Combustion and Thrust Vectoring.

Inlets and Nozzles: Subsonic inlets: pressure recovery, inlet sizing drag flow distortion. Supersonic inlets: Total and sonic state points, A/A^* normal shock based internal compression inlets, design sizing and performance. Exhaust nozzle, C-D nozzle, engine back pressure control, exit area ratio, and exhaust nozzle system performance in details.

UNIT II (12 Hrs.)

Parametric Cycle Analysis of Ideal Engines and Real Engines: Ideal Engines: Steps of engine parametric cycle analysis, basic assumptions. Applications to

- a) Ideal Ramjet
- b) Ideal Turbojet with and without afterburner
- c) Ideal Turbofan engine, optimum BPR and afterburning
- d) Ideal turboprop engine
- e) Ideal Turbo shaft engine.

Real Engines: Cycle analysis of turbojet, turbojet with after burner, turbofan and turboprop

UNIT III (10 Hrs.)

Combustion Chambers and centrifugal compressor: Combustion systems, burners, ignition, flame stability. After burners: System design, flame stability, pressure losses etc.

Centrifugal compressor – principle of operation, work done and pressure rise, diffuser, compressibility effects, compressor characteristics, computerized design procedures.

UNIT IV (20 Hrs.)

Axial Flow Compressor: Euler's Turbo-machinery equations. Axial flow compressor analysis, cascade action, flow field. Euler's equation, velocity diagrams, flow annulus area stage parameters. Degree of reaction, cascade airfoil nomenclature and loss coefficient, diffusion factor, stage loading and flow coefficient, stage pressure ratio, Blade Mach Number, repeating stage, repeating row, mean line design. Flow path dimensions, number of blades per stage. Radial variation, design process, performance.

Axial Flow Turbine: Turbine: Introduction to turbine analysis, mean radius stage calculations, stage parameters, stage loading and flow coefficients degree of reaction, stage temperature ratio and pressure ratio, blade spacing, radial variation, velocity ratio. Axial flow turbine, stage flow path, Dimensional stage analysis. Multistage design; steps of design: single stage and two stages. Turbine performance. Blade cooling.

RECOMMENDED BOOKS

1. J.D. Mattingly, Elements of Gas Turbine Propulsion, McGraw Hill 1st Ed. 1997.
2. Cohen, Rogers and Sarvanmottoo, Gas Turbine Theory, John Wiley.
3. P.G. Hill and C.R. Peterson, Mechanics and Thermodynamics of Propulsion, Addison-Wesley, 1970.
4. Gordon C. Oates, Aircraft Propulsion Systems, Technology and Design, AIAA Pub.
5. J.L. Kerebrock, Aircraft Engines and Gas Turbine, MIT Press 1991.

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2018 BATCH ONWARDS**

ROCKET PROPULSION

Subject Code –BANED1-712

**L T P Cr
3 1 0 4**

Duration:60 Hours

COURSE OBJECTIVE

- This course is aimed to provide knowledge of construction and working of solid, liquid and hybrid engines used in rockets and missiles.
- The student should be able to evaluate propulsive performance of the aerospace vehicle during the course.

LEARNING OUTCOMES

After undergoing the subject, student will be able to:

- Classify and explain working of various engines used in the rockets.
- Estimate flight performance of the rocket.
- Explain various types of missile trajectories and motion through the atmosphere.

UNIT – I (16 Hrs.)

Propulsion Systems: Jet Propulsion and Rocket Propulsion – Definition, Principle, Classification, Description and Application; Electrical, Nuclear and other Advanced Propulsion Systems.

Nozzle Theory: Ideal Rocket; Isentropic Flow through Nozzles; Exhaust Velocity; Choking; Nozzle Types; Nozzle Shape; Nozzle Area Expansion Ratio; Under expansion and Overexpansion; Nozzle Configurations; Real Nozzles; Performance Correction Factors; Multiphase Flow.

UNIT – II (14 Hrs.)

Thrust and Thrust Chambers: Thrust Equation; Specific Impulse, Thrust Coefficient, Characteristic Velocity and other Performance Parameters; Thrust Chambers; Methods of Cooling of Thrust Chambers; Steady State and Transient Heat Transfer; Heat Transfer Distribution; Steady State Heat Transfer to Liquids in Cooling Jackets; Uncooled Thrust Chambers; Thermal insulation; Radiation; Exhaust Plumes.

UNIT – III (12 Hrs.)

Solid Propellant Rocket Motors Application and Classification of Solid Propellant Rocket Motors; Propellants and Characteristics; Composite, Double Base and Composite Modified Double Base Propellants; Metallized Propellants; Ingredients and Processing; Propellant Burning Rate; Erosive Burning; Propellant Grains and Grain Configurations; Propellant Grains Stress and Strain.

UNIT-IV (18 Hrs.)

Liquid Propellant Rocket Engines: Propellant and their Properties; Monopropellants and Bipropellants; Storable, Cryogenic and Gelled Propellants; Fuels and Oxidizers; Metals; Propellant Tanks; Liquid Propellant Feed Systems; Injectors; Thrust Chamber Shapes and Characteristic Length; Hybrid Propellant Rocket Motors; Gaseous Propellant Rocket Motors and Reaction Control Systems.

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Rocket Testing: Types of Tests; Test Facilities and Safeguards; Safety and Environmental Concerns; Facilities and Safeguards; Monitoring and Control of Toxic Materials and Exhaust Gases; Instrumentation and Data Management; Reliability and Quality Control; Flight Testing.

RECOMMENDED BOOKS

1. Sutton, George P. and Biblarz Oscar, "Rocket Propulsion Elements", 9th Edition, John Willey and Sons, 2017.
2. Barrere, M., "Rocket Propulsion", 1st Edition Elsevier Publication, 1960
3. Turner, Martin J. L., "Rocket and Spacecraft Propulsion: Principle, Practice and New Developments", 3rd Edition, Springer, 2008.
4. John D Anderson Jr., "Introduction to flight, 8th Edition., Tata Mc Graw Hill, 2015.
5. J.W.Cornelisse, H F R Schoyer, K F Wakker, "Rocket propulsion and space flight dynamics", 4th Edition, Pitman Publishers, 2001.

AIR TRANSPORTATION AND OPERATIONS

Subject Code –BANES1-721

**L T P Cr
3 0 0 3**

Duration:45 Hours

COURSE OBJECTIVES

- Understand air traffic control, airlines, airports & its maintenance issues.
- Understand the procedures for various segments of aircraft operations and various issues involved during the airline operations.

LEARNING OUTCOMES

After undergoing the subject, student will be able to:

- Develop a process for designing airports and airline operations.
- Compare different communication aids used in air transportation operations.
- Infer working of air traffic control and management
- Evaluate the operational procedures and standards in air transportation industry.

UNIT – I (13Hrs.)

Air Transportation Industry: Introduction to airline industry and economics, determination of operating costs, Airline route selection and scheduling, Methods of describing peaking, planning of flight operations, special topics in airline operations, Emergence of Low Cost Carrier (LCC).

Aircraft characteristics affecting airport design, Functions of airport, Components of an airport, Airport layouts and configurations, Geometric design of the airfield, Wind Rose Diagram, Geometric design of the airfield, Design alternatives, Airport operations manual.

UNIT – II (10Hrs.)

Airspace Classification and Communication: Airspace classification, controlled versus uncontrolled airspace, Instrument Flying Rules (IFR) & Visual Flying Rules (VFR) in controlled & uncontrolled airspace, Airspace classes, Radio communication, Air Traffic Control (ATC) communication procedures, clearance, aircraft identification, destination

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airport, departure instructions, route of flight, altitude assignment, required reports, holding instructions.

UNIT – III(11Hrs.)

Air Traffic Control (Part I): Modeling & Simulation of ATC systems, Factors affecting Capacity & Delay, Estimation of airway Capacity & Delay, Human Factors and Controller Workload, Performance Based Navigation, Free Flight, Conflict Detection and resolution, Environmental effects of Aviation, Modeling air transport systems.

UNIT – IV (11Hrs.)

Air Traffic Control (Part II) and Procedures: Principles of Air Navigation and Air Traffic Control, Overview of CNS & ATM, Separation standards, Radar and Non-radar separation, wake turbulence longitudinal separation minima, Precision approaches for landing, Radar systems for ATC. Control towers, Delegation of responsibility,

RECOMMENDED BOOKS

1. Michael S. Nolan, “Fundamentals of Air Traffic Control”, 4th Edition, Thomson Brooks/Cole, USA, 2011.
2. Robert Horonjeff & Francis X. McKelvey, “Planning and Design of Airports”, 5th Edition, McGraw Hill Professional Publishing, 2010.
3. John H. H. Grover, “Airline Route Planning, Blackwell Scientific Publications, Oxford, UK, 1990.
4. John G. Wensveen, “Air Transportation: A Management Perspective”, 8th Edition, Ashgate Publishing Ltd., UK, 2015.
5. Seth B. Young & Alexander T. Wells , “Airport Planning and Management”, 7th Edition, McGraw Hill Education,2019.

AIRCRAFT COMPOSITE MATERIALS

Subject Code –BANES1-722

**L T P Cr
3 0 0 3**

Duration:45 Hours

COURSE OBJECTIVES

- This course will provide an understanding of the strength and stress behavior of the composite materials as explained by certain recent theories on the subject.
- The students are to be equipped with the knowledge of the composite material performance under fatigue, impact and other adverse conditions that an aircraft is subjected to.

LEARNING OUTCOMES

After undergoing the subject, student will be able to:

- Explain stress strain relation of composite material.
- Describe performance of composite components under fatigue, impact and other flight conditions.
- Differentiate and examine various types of aircraft composite materials

**MRSPTU B.TECH. (AERONAUTICAL ENGINEERING) SYLLABUS
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- Evaluate strength of composite materials.
- Explain composite materials, their applications to structure design, technology and calculate strength.
- Develop new solutions.

UNIT – I (11Hrs.)

Introduction: Definition, Characteristics, Classification, comparison with metallic materials, Particulate Composites, Fiber-reinforced composites, Applications of composites in Aerospace Industry.

Fibers: Glass fibers, Carbon & Graphite fibers, Aramid fibers, Boron fibers and other fibers. Properties and applications of various types of fibers. Fiber finishing, Weave pattern of fibers.

UNIT – II (11Hrs.)

Matrix Materials: Definition, Functions of a matrix, Thermosetting, thermoplastic, Carbon, Metal and Ceramic matrix materials. Curing of resins. Prepregs, characteristics, handling and storing of prepregs.

Sandwich and Laminate Composites: Sandwich construction, Face and Core material, Honeycomb structures and their properties, Honeycomb manufacturing, Fabrication of sandwich structures, Laminate lay-up, importance of ply orientation, lay-up code, Joining of laminate structures, Tooling required.

UNIT – III (12 Hrs.)

Manufacturing Processes: Open mold processes, Closed mold processes, Continuous processes. Their merits and demerits.

Fabrication of thermosetting resin matrix composites – Hand lay-up techniques, Bag molding processes, Resin transfer molding, Filament winding, Pultrusion, preformed molding compounds. Fabrication of thermoplastic resin matrix composites (short fiber composites), Fabrication of metal matrix composites, Fabrication of ceramic matrix composites

UNIT – IV (13 Hrs.)

Repair of Composites: Defects in composites, Non-destructive inspection techniques, Damage assessment, evaluation and classification, Repair of composites.

Advanced Composites: Introduction to Carbon Nanotube (CNT) and Graphene, Graphenated Carbon Nanotubes (g-CNT), Categories of CNT based on structures, Properties, characterization, fabrication and applications of these materials.

RECOMMENDED BOOKS

1. Lalit Gupta , “Advanced Composite Materials” , Himalayan Books Publication,1998.
2. B. D. Aggarwal, L. J. Broutman and K. Chandrashekar, “Analysis and Performance of Fiber Composites”, 3rd Edition, John Wiley & Sons, 2012.
3. R.M. Jones ,Mechanics of Composite Materials , Taylor & Francis, 2015.
4. Sabodh K. Garg, “Analysis of Structural Composite Materials”.
5. Daniel, “Engineering Mechanics of composite material”, Oxford University Press, 2013.

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AIRCRAFT MODELLING AND SIMULATION

Subject Code –BANES1-723

**L T P Cr
3 0 0 3**

Duration:45 Hours

COURSE OBJECTIVES

- To enable the student to describe process of Mathematical modelling for solving engineering problems.
- The student should be able to build mathematical models of aircraft dynamics.
- The student should be able to carry out simulation of aircraft dynamics in professional software.

LEARNING OUTCOMES

After undergoing the subject, student will be able to:

- Do mathematical modeling for solving engineering problems
- Develop aircraft mathematical models using standard techniques
- Execute computational simulation of aircraft dynamic models using professional software

UNIT – I (13 Hrs.)

Mathematical Modelling: Mathematical concepts in Modelling, why modelling, Goals of modelling studies, Process of Mathematical modeling, Real world problem, falling rock modeling, Computational problem, Basics of curve fittings, Engineering simulations and process of solving engineering problems, Analytical and numerical problem solutions with example.

UNIT –II (12 Hrs.)

Aircraft Modeling: Aircraft modeling, Aircraft state-space vectors, body-fixed coordinate systems, rotation matrix for wind and stability axes, Aircraft Equation of motion, kinetic equations for translation, kinematic equations for attitude, rigid-body kinetics, sensors and measurement systems, Introduction to Perturbation, Perturbation theory, nominal and perturbation values, Linearization of rigid body kinetics, Linear state-space model based on using wind and stability axes.

UNIT –III (11 Hrs.)

Dynamic Models: Decoupling: longitudinal and lateral modes: Longitudinal and lateral equations, Aerodynamic Forces and Moments, longitudinal and lateral forces and moments, standard aircraft maneuvers, bank to turn, altitude control dynamic models, longitudinal and lateral stability analysis, Satellite modelling, Attitude model

UNIT –IV (11 Hrs.)

Simulation models :Software Simulation of Aircraft dynamics models, 767 longitudinal and lateral model, F-16 Longitudinal and Lateral Mode, F2B Bristol Lateral model

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RECOMMENDED BOOKS:

1. Dominic J. Diston, "Computational Modelling and Simulation of Aircraft and the Environment", John Wiley & Sons, Ltd., 2009
2. R. C. Nelson, "Flight Stability and Automatic Control", McGraw-Hill Book, 1989
3. Brian L. Stevens, "Aircraft Control and Simulation, 2nd Edition, John Wiley & Sons, 2003.
4. David Allerton, "Principles of Flight Simulation", John Wiley and Sons, 2009.
5. John P. Fielding, "Introduction to Aircraft Design, 2nd Edition, Cambridge University Press, 2017.

MRSPTU

8th Semester

MRSPTU

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INTERNET OF THINGS

Subject Code –BANED1-811

**L T P Cr
3 0 0 3**

Duration:45 Hours

COURSE OBJECTIVES

In this course, student will explore various components of Internet of things such as Sensors, internetworking and cyber space. In the end they will also be able to design and implement IoT circuits and solutions.

LEARNING OUTCOMES

After undergoing the subject, student will be able to:

- Understand general concepts of Internet of Things (IoT)
- Recognize various devices, sensors and applications
- Apply design concept to IoT solutions
- Analyze various M2M and IoT architectures
- Evaluate design issues in IoT applications
- Create IoT solutions using sensors, actuators and Devices

UNIT – I (12 Hrs.)

Introduction to IoT: Sensing, Actuation, Networking basics, Communication Protocols, Sensor Networks, Machine-to-Machine Communications, IoT Definition, Characteristics. IoT Functional Blocks, Physical design of IoT, Logical design of IoT, Communication models & APIs.

M2M to IoT-The Vision-Introduction, From M2M to IoT, M2M towards IoT-the global context, A use case example, Differing Characteristics. Definitions, M2M Value Chains, IoT Value Chains, An emerging industrial structure for IoT

UNIT – II (11 Hrs.)

M2M vs IoT An Architectural Overview–Building architecture, Main design principles and needed capabilities, An IoT architecture outline, standards considerations. Reference Architecture and Reference Model of IoT.

UNIT – III (11 Hrs.)

IoT Reference Architecture- Getting Familiar with IoT Architecture, Various architectural views of IoT such as Functional, Information, Operational and Deployment. Constraints affecting design in IoT world- Introduction, Technical design Constraints.

Domain specific applications of IoT: Home automation, Industry applications, Surveillance applications, Other IoT application.

UNIT – IV(11 Hrs.)

Developing IoT solutions: Introduction to Python, Introduction to different IoT tools, Introduction to Arduino and Raspberry Pi Implementation of IoT with Arduino and Raspberry, Cloud Computing, Fog Computing, Connected Vehicles, Data Aggregation for the IoT in Smart Cities, Privacy and Security Issues in IoT.

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RECOMMENDED BOOKS

1. Jan Holler, VlasiosTsiatsis, Catherine Mulligan, Stefan Avesand, Stamatis Karnouskos, David Boyle, "From Machine-to-Machine to the Internet of Things: Introduction to a New Age of Intelligence", 1st Edition, Academic Press, 2014.
2. Vijay Madiseti and ArshdeepBahga, "Internet of Things (A Hands-on Approach)", 1st Edition, VPT, 2014
3. Francis da Costa, "Rethinking the Internet of Things: A Scalable Approach to Connecting Everything", 1st Edition, Apress Publications, 2013
4. Cuno Pfister, "Getting Started with the Internet of Things", O'Reilly Media, 2011

CARBON FIBRE REINFORCED POLYMER

Subject Code –BANED1-812

**L T P Cr
3 0 0 3**

Duration:45 Hours

COURSE OBJECTIVES

The course on Carbon fibre reinforced has become very essential for a Aeronautical/ aerospace engineer to meet the demand of the today's world applications, where advances in Technological needs demands High strength, corrosion resistance, fatigue / creep resistant & stiff structure with very lesser densities such as in making of automobiles, aircrafts, space crafts, etc.

After learning the course the students should be able to :-

- Understand the significance of advanced materials.
- Compare the set of technological properties of the advanced materials with the conventional materials.
- Distinguish the construction, constituent's phases & characteristics of the composite materials.
- Calculate the strength of the carbon fibre reinforced polymer under transverse & longitudinal loading applications.
- Identify the strengthening mechanics adopted in a carbon fibre reinforced polymer
- Explain the fabrication techniques of different types of composite materials.

UNIT-I (12 Hrs.)

Introduction: Classifications of Engineering Materials, Concept of composite materials, Matrix materials, Functions of a Matrix, Desired Properties of a Matrix, Polymer Matrix (Thermosets and Thermoplastics), Metal matrix, Ceramic matrix, Carbon Matrix, Glass Matrix etc. Types of Reinforcements/Fibers: Role and Selection or reinforcement materials, Types of fibres, Glass fibers, Carbon fibers, Aramid fibers , Metal fibers, Alumina fibers, Boron Fibers, Silicon carbide fibers, Quartz and Silica fibers, Multiphase fibers, Whiskers, Flakes etc., Mechanical properties of fibres. Material properties that can be improved by forming a composite material and its engineering potential

UNIT-II (11 Hrs.)

Various types of composites: Classification based on Matrix Material: Organic Matrix composites, Polymer matrix composites (PMC), Carbon matrix Composites or Carbon-

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Carbon Composites, Metal matrix composites (MMC), Ceramic matrix composites (CMC); Classification based on reinforcements: Fiber Reinforced Composites, Fiber Reinforced Polymer (FRP) Composites, Laminar Composites, Particulate Composites, Comparison with Metals, Advantages & limitations of Composites

UNIT-III (13 Hrs.)

Fabrication methods: Processing of Composite Materials: Overall considerations, Autoclave curing, Other Manufacturing Processes like filament winding, compression molding, resin-transplant method, pltrusion, pre-peg layer, Fiber-only performs, Combined Fiber-Matrix performs, Manufacturing Techniques: Tooling and Specialty materials, Release agents, Peel plies, release films and fabrics, Bleeder and breather plies, bagging films

UNIT-IV (09 Hrs.)

Testing of Composites: Mechanical testing of composites, tensile testing, Compressive testing, Intra-laminar shear testing, Inter-laminar shear testing, Fracture testing etc.

Books:

1. K.K. Chawla, "Composite Materials – Science & Engg.", Springer, New York, 1988.
2. Mel M. Schwartz, "Composite Materials: Properties, Non-destructive testing and Repair", Prentice Hall, New Jersey ,1996.
3. L.J. Broutman and R.M. Krock, "Modern Composite Materials", Addison-Wesley, 1967.
4. David A Colling & Thomas Vasilos, "Industrial Materials: Polymers, Ceramics and Composites, Vol. 2", Prentice Hall, N. Jersey, 1995.

BOUNDARY LAYER THEORY

Subject Code –BANED1-821	L T P Cr	Duration:60 Hours
	3 1 0 4	

COURSE OBJECTIVES

- This course will provide knowledge of basic concepts of momentum and thermal boundary layers, formulation of equations and solutions given by different investigators in case of flat surface and axi-symmetric bodies.
- The study involves the analysis and understanding of empirical results for laminar boundary layer, transition and turbulent boundary layer.

LEARNING OUTCOMES

After undergoing the subject, student will be able to:

- Describe and formulate momentum and thermal boundary layers equations in respect of flat surface and axi-symmetric bodies.
- Analyze empirical results obtained for laminar, transition and turbulent boundary layers.

UNIT – I (16Hrs.)

Review of Basic Concepts and Formulation of Equation: Descriptors/Topics: Boundary layer thickness, Momentum thickness, Energy thickness, Shape Factor, separation equations

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of Motion and energy equation for compressible viscous fluid-derivation and discussion, boundary layer equation and their general properties.

UNIT – II (16 Hrs.)

Exact and Approximate Methods and Axially Symmetrical Body: Descriptors/Topics: Flat plate at zero incidence, Flows with pressure gradient, von Karman and Polhausen Methods. Rotation near ground, Circular jet, Boundary layer on a body of revolution, flow in the entrance section of pipe.

UNIT – III (16 Hrs.)

Thermal Boundary Layer, Transition and Boundary Layer Control: Descriptors/Topics: Heat transfer from heated surface. Incompressible and compressible laminar flow over a flat plate, Plate thermometer problem. Pipe flow and flow over a flat plate, Critical Reynolds number, Turbulent spots, Principles of theory of stability of Laminar flows, Sommerfeld equation, factors affecting transition, Laminar airfoils.

Methods of control, Fundamental equations and exact solution for a flat plate with uniform suction, Compressible Boundary Layers with suction, Approximate solution for a flat plate with uniform suction, compressible boundary layers with suction approximate solutions, theoretical and experimental results.

UNIT – IV (12Hrs.)

Turbulent Boundary Layer and pipe flows: Descriptors/Topics: Fundamentals of Turbulent flow, Mean motion and fluctuations, Reynolds, stresses, wind tunnel Turbulence, Prandtl's mixing Length theory, Von Karman's similarity Hypothesis, Velocity distribution laws. Experimental results through smooth pipes, Relation between laws of friction and velocity distribution, Universal Resistance law for smooth pipe at large Reynolds number, Rough pipe and equivalent roughness.

RECOMMENDED BOOKS

1. John D. Anderson (Jr.), 'Fundamentals of Aerodynamics', 2nd Edition., McGraw Hill.
2. Gupta and Gupta, 'Fluid Mechanics and its Applications', Wiley Eastern, **1960**
3. H. Schlichting, 'Boundary Layer Theory', 6th Edition., McGraw Hill, **1986**.
4. Frank M. White, 'Fluid Mechanics', 2nd Edition, McGraw Hill, **1986**
5. John Bertin , Aerodynamics for Engineers, 4th Ed. , Pearson Publishers 2004

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ADVANCED AERODYNAMICS

Subject Code –BANED1-822

L T P Cr

Duration:60 Hours

3 1 0 4

COURSE OBJECTIVES

- Analyze supersonic flows by applying different techniques.
- Calculate boundary layer thickness by applying different methods.
- Analyze complete supersonic and hypersonic configurations.

LEARNING OUTCOMES

After undergoing the subject, student will be able to:

- Analyze flow properties in compressible medium.
- Design supersonic nozzle by method of characteristics
- Evaluate aerodynamic characteristics of supersonic airfoils theoretically.
- Analyze and design supersonic and hypersonic aircraft configurations

UNIT – I (16 Hrs.)

Non Linear Supersonic Flows: Numerical techniques, method of characteristics, supersonic nozzle design, finite difference method, time dependent technique for supersonic blunt bodies, numerical problems

Laminar and Turbulent Boundary Layer:

Laminar :Compressible flow over a flat plate, reference temperature method, stagnation point aerodynamic heating, boundary layer over arbitrary bodies using finite difference method, Turbulent: reference temperature method for flat plate, Meador-Smart reference temperature method, prediction of airfoil drag ,turbulence modeling, numerical problems

UNIT – II (16 Hrs.)

Flow With Small Perturbations: One dimensional wave equation, D' Alembert's solution,2-D Subsonic and supersonic flow past a wavy wall, method of characteristics to unsteady 1-D homentropic flow, uniform flow regions, simple wave regions and non simple wave regions, simple compression and expansion waves

UNIT – III (16 Hrs.)

Bodies of Revolution: Introduction, cylindrical coordinates, axially symmetric flow, subsonic flow, supersonic flow, solution for cone, and slender cone, yawed body of revolution in supersonic flow, cross flow solutions for slender body of revolution, lift of slender body of revolution, Rayleigh formula

UNIT – IV(12 Hrs.)

Supersonic Airplane Configurations And Hypersonic Flow

Governing equations and boundary conditions, consequences of linearity, conical flow method for rectangular, swept, delta and arrow wings, singularity distribution method, design consideration for supersonic aircraft, aerodynamic interaction, supersonic analysis for complete configurations. Qualitative aspects, Newtonian theory, lift and drag of wings at hypersonic speeds, hypersonic shock wave relations, mach no. independence, hypersonic and CFD, high L/D hypersonic configurations, Aerodynamic heating, ground test data and flight test data

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RECOMMENDED BOOKS

1. John D Anderson Jr., "Introduction to flight, 8th Edition., Tata Mc Graw Hill, 2015
2. John J Bertin, "Aerodynamics for Engineers" , 6th Edition, Pearson Publishers, 2013.
3. Liepmann, H W and A. Roshk, "Elements of Gas dynamics", Dover Publications Inc., 2002.
4. Anderson J. D, "Modern Compressible Flow with Historical Perspective", 3rd Edition, McGraw-Hill, 2017.
5. Zucrow, M J and J D Hoffman, "Gas Dynamics - Vol. 1" , Wiley India Pvt Ltd, 2013

EXPERIMENTAL AERODYNAMICS

Subject Code –BANED1-823

**L T P Cr
3 1 0 4**

Duration:60 Hours

COURSE OBJECTIVES

- Gain insight on the problem associated with design, setup and execution of experimental methods pertinent to aerodynamics/fluid mechanics and the most important and up-to-date measurement techniques.
- Develop a practical knowledge and capability to perform measurements in dedicated facilities aimed at studying fundamental problems in aerodynamics/fluid mechanics.

LEARNING OUTCOME

At the end of the subject, the student will be able to:

- Differentiate between different types tunnels
- Select an appropriate technique to perform an experiment to study aerodynamic characteristics of a body
- Acquire and interpret data using different data acquisition techniques.
- Integrate experimental equipment with data acquisition system using graphical programming.

UNIT – I (16 Hrs.)

Introduction: Types of wind tunnels – Open and closed wind tunnels; wind tunnels with open and closed test sections; variable density wind tunnels; smoke tunnels; vertical wind tunnels; sub-sonic, super-sonic, trans-sonic wind tunnel; water tunnels. Wind tunnel calibration, Measurements techniques in wind tunnels: forces and moments, pressure, velocity, temperature, aero-acoustic measurements.

UNIT – II(16 Hrs.)

Qualitative and Quantitative Measurements:Low speed flow visualization techniques, Schlieren, shadowgraph, interferometry, introduction to laser diagnostic techniques.

Measurement of temperature using thermocouples, resistance thermometers, temperature sensitive paints and liquid crystals, Steady and unsteady pressure measurements and various types of pressure probes and transducers, errors in pressure measurements, thermocouples, thermography, velocity measurement using hot wire anemometry , Laser Doppler Velocimetry and Particle Image Velocimetry

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UNIT – III(16 Hrs.)

Data Acquisition and Processing: Data acquisition and digital signal processing techniques, wind tunnel data acquisition, measurement of steady and unsteady pressure, velocity, temperature, turbulence intensity, calibration of force, pressure and acoustic sensors. Calibration of single and two wire probes.

Data validation techniques: verifying experimental data with theoretical and computational results.

UNIT – IV(12 Hrs.)

Virtual Instrumentation: Introduction to VI (virtual instrumentation) and its typical applications, functional systems, graphical programming, data flow techniques, advantages of VI techniques. VI programming techniques; VIs and sub-VIs, loops and charts, arrays, clusters and graphs, case and sequence structures, formula nodes, string and file I/O, DAQ methods, code interface nodes.

RECOMMENDED BOOKS

1. Jewel B. Barlow, “Low speed wind tunnel testing”, 3rd Edition, John Wiley & sons, 2010.
2. Bruno Chanetz, “Experimental Aerodynamics: An Introductory Guide”, 1st Edition, Springer Nature Switzerland AG, 2020.
3. Justin D. Pereira , “Wind Tunnels: Aerodynamics Models & Experiments (Engineering Tools, Techniques and Tables)”, U.K. Edition, Nova Science Publishers Inc, 2011.
4. Sanjay Gupta “Virtual instrumentation using Lab VIEW ”,2nd Edition, McGraw Hill Education, 2017.
5. Helmut Krakowski, “Wind Tunnel Designs And Their Diverse Engineering Applications”, 1st Edition, Scitus Academics”, 2017.

Total Contact Hours= (28+2***)/(27+2***)**

Total Marks=1200

Total Credits=21

SEMESTER WISE COURSE DISTRIBUTION

SEMESTER WISE COURSE DISTRIBUTION								
First Semester								
Sr. No.	Subject Code	Name of the Subject	Contact Hours		Marks Distribution			Credits
			Theory	Practical	Internal	External	Total	
1.	BAGRS1-151	Agricultural Heritage	1	0	40	60	100	1
2.	BAGRS1-152	Rural Sociology and Educational Psychology	2	0	40	60	100	2
3.	BAGRS1-153	Fundamentals of Soil Science	2	0	40	60	100	2
4.	BAGRS1-154	Fundamentals of Agronomy	3	0	40	60	100	3
5.	BAGRS1-155	Fundamentals of Plant Biochemistry	2	0	40	60	100	2
6.	BAGRS1-156	Introduction to Forestry	1	0	40	60	100	1
7.	BAGRS1-157	Fundamentals of Horticulture	1	0	40	60	100	1
8.	BAGRS1-158	Introductory Biology* /Introductory Mathematics**	1	0	20	30	50	1
			2	0	40	60	100	2
9.	BAGRS1-159	Fundamentals of Soil Science Lab	0	2	20	30	50	1
10.	BAGRS1-160	Fundamentals of Agronomy Lab	0	2	20	30	50	1
11.	BAGRS1-161	Fundamentals of Plant biochemistry Lab	0	2	20	30	50	1
12.	BAGRS1-162	Introduction to Forestry Lab	0	2	20	30	50	1
13.	BAGRS1-163	Fundamentals of Horticulture Lab	0	2	20	30	50	1
14.	BAGRS1-164	Introductory Biology Lab	0	2	20	30	50	1
15.	BAGRS1-165	Comprehension and Communication Skills in English	1	0	40	60	100	1
16.	BAGRS1-166	Comprehension and Communication Skills in English Lab	0	2	20	30	50	1
17.	BAGRS1-167	Human Value & Ethics (Non-gradual)	1***	0***	Satisfactory/Unsatisfactory		Non-credit	-
18.	BAGRS1-168	NSS/NCC/Physical Education & Yoga Practices(Non-gradual)	0***	1***	Satisfactory/Unsatisfactory		Non-credit	-
		Total	15+1***	12+1***	480	720	1200	21

*Remedial Course for Non-Medical Students

**Remedial Course for Medical Students

Total Contact Hours =32

Total Marks=1300

Total Credits=24

Second Semester

Sr. No.	Subject Code	Name of the Subject	Contact Hours		Marks Distribution			Credits
			Theory	Practical	Internal	External	Total	
1.	BAGRS1-251	Fundamentals of Plant Pathology	3	0	40	60	100	3
2.	BAGRS1-252	Crop Physiology	1	0	40	60	100	1
3.	BAGRS1-253	Fundamentals of Entomology	3	0	40	60	100	3
4.	BAGRS1-254	Fundamentals of Agricultural Economics	2	0	40	60	100	2
5.	BAGRS1-255	Agricultural Microbiology	1	0	40	60	100	1
6.	BAGRS1-256	Fundamentals of Genetics	2	0	40	60	100	2
7.	BAGRS1-257	Introduction to Agricultural Extension Education	2	0	40	60	100	2
8.	BAGRS1-258	Soil and Water Conservation Engineering	1	0	40	60	100	1
9.	BAGRS1-259	Fundamentals of Plant Pathology lab	0	2	20	30	50	1
10.	BAGRS1-260	Crop Physiology lab	0	2	20	30	50	1
11.	BAGRS1-261	Fundamentals of Entomology Lab	0	2	20	30	50	1
12.	BAGRS1-262	Agricultural Microbiology Lab	0	2	20	30	50	1
13.	BAGRS1-263	Fundamentals of Genetics Lab XIV	0	2	20	30	50	1
14.	BAGRS1-264	Introduction to Agricultural Extension Education Lab	0	2	20	30	50	1
15.	BAGRS1-265	Soil and Water Conservation Engineering Lab	0	2	20	30	50	1
16.	BAGRS1-266	Communication Skills and Personality Development	1	0	40	60	100	1
17.	BAGRS1-267	Communication Skills and Personality Development Lab	0	2	20	30	50	1
		Total	16	16	520	780	1300	24

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Total Contact Hours =32

Total Marks=1350

Total Credits=23

Third Semester

Sr. No	Subject Code	Name of the Subject	Contact Hours		Marks Distribution			Credits
			Theory	Practical	Internal	External	Total	
			1.	BAGRS1-351	Crop Production Technology-I (<i>Kharij</i> Crops)	1	0	
2.	BAGRS1-352	Environmental Studies and Disaster Management	2	0	40	60	100	2
3.	BAGRS1-353	Agricultural Finance and Co-operation	2	0	40	60	100	2
4.	BAGRS1-354	Farm Power and Machinery	1	0	40	60	100	1
5.	BAGRS1-355	Fundamentals of Plant Breeding	2	0	40	60	100	2
6.	BAGRS1-356	Production Technology for Vegetables and Spices	1	0	40	60	100	1
7.	BAGRS1-357	Agricultural Informatics	1	0	40	60	100	1
8.	BAGRS1-358	Statistical Methods	1	0	40	60	100	1
9.	BAGRS1-359	Livestock and Poultry Management	3	0	40	60	100	3
10.	BAGRS1-360	Crop Production Technology-I (<i>Kharij</i> Crops) Lab	0	2	20	30	50	1
11.	BAGRS1-361	Environmental studies and Disaster management Lab	0	2	20	30	50	1
12.	BAGRS1-362	Agricultural Finance and Co-operation Lab	0	2	20	30	50	1
13.	BAGRS1-363	Farm Power and Machinery Lab	0	2	20	30	50	1
14.	BAGRS1-364	Fundamentals of Plant Breeding Lab	0	2	20	30	50	1
15.	BAGRS1-365	Production Technology Vegetables and Spices Lab	0	2	20	30	50	1
16.	BAGRS1-366	Agricultural Informatics Lab	0	2	20	30	50	1
17.	BAGRS1-367	Statistical Methods Lab	0	2	20	30	50	1
18.	BAGRS1-368	Livestock Production and Management Lab	0	2	20	30	50	1
Total			14	18	540	810	1350	23

MRSPTU B.SC. (HONS.) AGRICULTURE SYLLABUS 2021 BATCH ONWARDS

Total Contact Hours =33

Total Marks=1400

Total Credits=22

Fourth Semester

Sr. No.	Subject Code	Name of the Subject	Contact Hours		Marks Distribution			Credits
			Theory	Practical	External	Internal	Total	
1.	BAGRS1-451	Crop Production Technology-II (Rabi Crops)	1	0	40	60	100	1
2.	BAGRS1-452	Problematic Soils and their management	2	0	40	60	100	2
3.	BAGRS1-453	Production technology for Fruits and Plantation crops	1	0	40	60	100	1
4.	BAGRS1-454	Farming system and Sustainable Agriculture	1	0	40	60	100	1
5.	BAGRS1-455	Agro-meteorology and Climate Change	1	0	40	60	100	1
6.	BAGRS1-456	Agricultural Marketing, Trade and Prices	2	0	40	60	100	2
7.	BAGRS1-457	Renewable Energy and Green Technology	1	0	40	60	100	1
8.	BAGRS1-458	Principles of Seed Technology	1	0	40	60	100	1
9.	BAGRS1-459	Production Technology for Ornamental Crops, MAPandL and scaping	1	0	40	60	100	1
10.	BAGRS1-460	Fundamentals of Plant Biotechnology	2	0	40	60	100	2
11.	BAGRS1-461	Crop Production Technology-II (RabiCrops) Lab	0	2	20	30	50	1
12.	BAGRS1-462	Production technology for Fruits and Plantation crops Lab	0	2	20	30	50	1
13.	BAGRS1-463	Agro-meteorology and Climate Change Lab	0	2	20	30	50	1
14.	BAGRS1-464	AgriculturalMarketing,Trade and Prices Lab	0	2	20	30	50	1
15.	BAGRS1-465	Renewable Energy and Green Technology Lab	0	2	20	30	50	1
16.	BAGRS1-466	Principlesof SeedTechnology Lab	0	2	20	30	50	2

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17.	BAGRS1-467	Production Technology for Ornamental Crops, MAP and Landscaping Lab	0	2	20	30	50	1
18.	BAGRS1-468	Fundamentals of Plant Biotechnology Lab	0	2	20	30	50	1
19.	BAGRS1-469	Elective Agrochemicals/Commercial Plant Breeding/Bio-pesticides and Bio-fertilizers/ Weed Management	2	0	40	60	100	2
20.	BAGRS1-470	Elective (Lab) Agrochemicals/Commercial Plant Breeding/Bio-pesticides and Bio-fertilizers/Weed Management	0	2	20	30	50	1
		Total	15	18	620	930	1550	2 5

SEMESTER I**AGRICULTURAL HERITAGE****SECTION-A**

Introduction of Indian agricultural heritage; Ancient agricultural practices, Relevance of heritage to present day agriculture;

SECTION-B

Past and present status of agriculture and farmers in society; Journey of Indian agriculture and its development from past to modern era; Plant production and protection through indigenous traditional knowledge;

SECTION-C

Crop voyage in India and world; Agriculture scope; Importance of agriculture and agricultural resources available in India; Crop significance and classifications;

SECTION-D

National agriculture setup in India; Current scenario of Indian agriculture; Indian agricultural concerns and future prospects.

RURAL SOCIOLOGY & EDUCATIONAL PSYCHOLOGY**Section-A:**

Sociology and Rural sociology: Definition and scope, its significance in agriculture extension.

Section-B:

Social Ecology; Rural society, Social Groups, Social Stratification, Culture concept, Social Institution, Social Change & Development.

Section-C:

Educational psychology: Meaning & its importance in agriculture extension. Behavior: Cognitive, affective, psychomotor domain.

Section-D:

Personality, Learning, Motivation, Theories of Motivation, Intelligence.

FUNDAMENTALS OF SOIL SCIENCE**SECTION-A**

Soil as a natural body, Pedological and edaphological concepts of soil; Soil genesis: soil forming rocks and minerals; weathering, processes and factors of soil formation; Soil Profile, components of soil;

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SECTION-B

Soil physical properties: soil-texture, structure, density and porosity, soil colour, consistence and plasticity; Elementary knowledge of soil taxonomy classification; soils of India; Soil water retention, movement and availability;

SECTION-C

Soil air, composition, gaseous exchange, problem and plant growth; source, amount and flow of heat in soil; soil temperature and plant growth; Soil reaction-pH, soil acidity and alkalinity, buffering, effect of pH on nutrient availability;

SECTION-D

Soil colloids - inorganic and organic; silicate clays: constitution and properties; [sources of charge; ion exchange, cation exchange capacity, base saturation](#); soil organic matter: composition, properties and its influence on soil properties; [humic substances - nature and properties](#); soil organisms: macro and micro organisms, their beneficial and harmful effects; [Soil pollution - behaviour of pesticides and inorganic contaminants, prevention and mitigation of soil pollution.](#)

FUNDAMENTALS OF AGRONOMY

SECTION-A

Agronomy and its scope, seeds and sowing, tillage and tilling, crop density and geometry, Crop nutrition, manures and fertilizers, nutrient use efficiency,

SECTION-B

Water resources, soil plant water relationship, crop water requirement, water use efficiency, irrigation-scheduling criteria and methods, quality of irrigation water, water logging.

SECTION-C

Weeds- importance, classification, crop weed competition, concepts of weed management principles and methods, herbicides- classification, selectivity and resistance, allelopathy.

SECTION-D

Growth and development of crops, factors affecting growth and development, plant ideotypes, crop rotation and its principles, adaptation and distribution of crops, crop management technologies in problematic areas, harvesting and threshing of crops.

FUNDAMENTALS OF PLANT BIOCHEMISTRY

SECTION-A

Importance of Biochemistry. Properties of Water, pH and Buffer.

SECTION-B

Carbohydrate: Importance and classification. Structures of Monosaccharides, [Reducing and oxidizing properties of Monosaccharides, Mutarotation](#); Structure of Disaccharides and Polysaccharides.

SECTION-C

Lipid: Importance and classification. Proteins: Importance of proteins and classification; [Structures and](#)

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[properties of fatty acids; storage lipids and membrane lipids](#). Structures, [titration and](#) zwitter ions, nature of amino acids; Structural organization of proteins. Enzymes: General properties; Classification; Mechanism of action.

SECTION-D

Nucleic acids: Importance and classification; Structure of Nucleotides, A, B & Z DNA; RNA: Types and Secondary & Tertiary structure. Metabolism of carbohydrates: Glycolysis, TCA cycle, Electron transport chain. Metabolism of lipids: Beta oxidation, Biosynthesis of fatty acids.

INTRODUCTION TO FORESTRY

SECTION-A

Introduction – definitions of basic terms related to forestry, objectives of silviculture, forest classification, salient features of Indian Forest Policies. Forest regeneration, Natural regeneration- natural regeneration from seed and vegetative parts, coppicing, pollarding, root suckers;

SECTION-B

Artificial regeneration – objectives, choice between natural and artificial regeneration, essential preliminary considerations. Crown classification. Tending operations – weeding, cleaning, thinning – mechanical, ordinary, crown and advance thinning. Forest mensuration – objectives, diameter measurement, instruments used in diameter measurement; Non instrumental methods of height measurement - shadow and single pole method;

SECTION-C

Instrumental methods of height measurement - geometric and trigonometric principles, instruments used in height measurement; tree stem form, form factor, form quotient, measurement of volume of felled and standing trees, age determination of trees.

SECTION-D

Agroforestry – definitions, importance, criteria of selection of trees in agroforestry, different agroforestry systems prevalent in the country, shifting cultivation, taungya, alley cropping, windbreaks and shelter belts, home gardens. Cultivation practices of two important fast growing tree species of the region.

FUNDAMENTALS OF HORTICULTURE

SECTION-A

Horticulture - Its definition and branches, importance and scope; horticultural and botanical classification; principles of orchard establishment; climate and soil for horticultural crops;

SECTION-B

Plant propagation-methods and propagating structures; Seed dormancy, Seed germination,

SECTION-C

Principles and methods of training and pruning, juvenility and flower bud differentiation; unfruitfulness; pollination, pollinizers and pollinators; fertilization and parthenocarpy; medicinal and aromatic plants;

SECTION-D

Importance of plant bio-regulators in horticulture. Irrigation – methods, Fertilizer application in horticultural crops.

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INTRODUCTORY BIOLOGY

Section-A

Introduction to the living world, diversity and characteristics of life.

Section-B

Origin of life, Evolution and Eugenics. Binomial nomenclature and classification Cell and cell division.

Section-C

Morphology of flowering plants. Seed and seed germination.

Section-D

Plant systematic- viz; Brassicaceae, Fabaceae and Poaceae. Role of animals in agriculture.

INTRODUCTORY MATHEMATICS

SECTION-A

Straight lines: Distance formula, section formula (internal and external division), [Change of axes \(only origin changed\)](#), Equation of co-ordinate axes, Equation of lines parallel to axes, Slope-intercept form of equation of line, Slope-point form of equation of line, Two point form of equation of line.

SECTION--B

Intercept form of equation of line, Normal form of equation of line, General form of equation of line, Point of intersection of two straight lines, Angles between two straight lines, Parallel lines, Perpendicular lines. [Angle of bisectors between two lines](#), [Area of triangle and quadrilateral](#).

SECTION--C

Circle: Equation of circle whose centre and radius is known, General equation of a circle, Equation of circle passing through three given points, Equation of circle whose diameters is line joining two points (x_1, y_1) & (x_2, y_2) . [Tangent and Normal to a given circle at given point \(Simple problems\)](#), [Condition of tangency of a line \$y = mx + c\$ to the given circle \$x^2 + y^2 = a^2\$](#)

SECTION--D

Definition of function, limit and continuity (of algebraic functions); [Simple problems on limit](#), [Simple problems on continuity](#).

Differential Calculus: Differentiation of algebraic functions, exponential functions and logarithmic differentiation (excluding trigonometric functions). Derivative of sum, difference, product and quotient of two functions. [Differentiation of functions of functions \(Simple problem based on it\)](#), [Logarithmic differentiation \(Simple problem based on it\)](#), [Differentiation by substitution method and simple problems based on it](#), [Differentiation of Inverse Trigonometric functions](#). [Maxima and Minima of the functions of the form \$y=f\(x\)\$ \(Simple problems based on it\)](#).

Integral Calculus: [Integration of simple functions](#); Integration of Product of two functions, Integration by substitution method, Definite Integrals (of algebraic functions). [Area under simple well-known curves \(simple problems based on it\)](#).

Matrix: Definition of Matrices, Addition, Subtraction, Multiplication, Transpose of matrix up to 3rd order.

Determinants: Properties of determinants and their evaluation, Inverse of matrix up to 3rd order. Matrix method.
M

FUNDAMENTALS OF SOIL SCIENCE LAB**Practical:**

Study of soil profile in field. Study of soil sampling tools, collection of representative soil sample, its processing and storage. Study of soil forming rocks and minerals. Determination of soil density, moisture content and porosity. [Determination of soil texture by feel and Bouyoucos Methods.](#) [Studies of capillary rise phenomenon of water in soil column and water movement in soil.](#) Determination of soil pH and electrical conductivity. [Determination of cation exchange capacity of soil.](#) Study of soil map. Determination of soil colour. Estimation of organic matter content of soil. [Demonstration of heat transfer in soil.](#)

FUNDAMENTALS OF AGRONOMY LAB**Practical:**

Identification of crops, seeds, fertilizers, pesticides and tillage implements, [study of agroclimatic zones of India.](#) Effect of sowing depth on germination and seedling vigour, Identification of weeds in crops, Methods of herbicide and fertilizer application, Study of yield contributing characters and yield estimation, Seed germination and viability test, Numerical exercises on fertilizer requirement, plant population, herbicides and water requirement, Use of tillage implements-reversible plough, one way plough, harrow, leveler, seed drill, Study of soil moisture measuring devices, Measurement of field capacity, bulk density and infiltration rate, Measurement of irrigation water.

FUNDAMENTALS OF PLANT BIOCHEMISTRY LAB**Practical**

Preparation of solution, pH & buffers, Qualitative tests of carbohydrates, amino acids and proteins. Paper chromatography, Sterilization techniques. [Quantitative estimation of glucose/proteins.](#) [Titration methods for estimation of amino acids/lipids.](#) [Effect of pH, temperature and substrate concentration on enzyme action.](#) [Paper chromatography/ TLC demonstration for separation of amino acids/ Monosaccharides.](#) [Sterilization techniques.](#) Composition of various tissue culture media and preparation of stock solutions for MS nutrient medium. Callus induction from various explants, micropropagation [hardening and acclimatization.](#) [Demonstration on isolation of DNA.](#) [Demonstration of gel electrophoresis techniques and DNA finger printing.](#)

INTRODUCTION TO FORESTRY LAB

Identification of tree-species. Diameter measurements using calipers and tape, diameter measurements of forked, buttressed, fluted and leaning trees. Height measurement of standing trees by shadow method, single pole method and hypsometer. Volume measurement of logs using various formulae. Nursery lay out, seed sowing, vegetative propagation techniques. Forest plantations and their management. Visits of nearby forest based industries.

FUNDAMENTALS OF HORTICULTURE LAB**Practical**

Identification of garden tools. Identification of horticultural crops. Preparation of seedbed/nursery bed. Practice of sexual and asexual methods of propagation including micropropagation. Layout and planting of orchard. Training and pruning of fruit trees. Preparation of potting mixture. Fertilizer application in M

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different crops. Visits to commercial nurseries/orchard.

INTRODUCTORY BIOLOGY LAB

Morphology of flowering plants – root, stem and leaf and their modifications. Inflorescence, flower and fruits. Cell, tissues & cell division. Internal structure of root, stem and leaf. Study of specimens and slides. Description of plants - Brassicaceae, Fabaceae and Poaceae

COMPREHENSION AND COMMUNICATION SKILLS IN ENGLISH

Selected Short Stories of eminent writers from India and abroad: Rabindranath Tagore, Mulk Raj Anand, Premchand, R K Narayan, Isaac Asimov (Science Fiction), Sudha Murthy, Leo Tolstoy, O Henry, Anton Chekhov, Guy De Maupassant, K A Abbas Basic Grammar: Articles, Prepositions, Concord, Transformation, Synthesis, Reported Speech, Active- Passive Voice

COMPREHENSION AND COMMUNICATION SKILLS IN ENGLISH (PRACTICAL)

Listening Comprehension: Listening to short talks/lectures, speeches (scientific, commercial and general in nature). Oral Communication: Phonetics, stress and intonation, Conversation practice. Conversation: rate of speech, clarity of voice, speaking and Listening, politeness & Reading skills: reading dialogues, rapid reading, intensive reading, improving reading skills. Mock Interviews: testing initiative, team spirit, leadership, intellectual ability. Group Discussions and extempore.

HUMAN VALUES & ETHICS

Section-A

Values and Ethics-An Introduction. Goal and Mission of Life.

Section-B

Vision of Life. Principles and Philosophy. Self Exploration. Self Awareness. Self Satisfaction.

Section-C

Decision Making. Motivation. Sensitivity. Success. Selfless Service. Positive Spirit.

Section-D

Case Study of Ethical Lives. Body, Mind and Soul. Attachment and Detachment. Spirituality Quotient. Examination

NSS / NCC / PHYSICAL EDUCATION AND YOGA PRACTICES

Teaching of skills of Football/basketball/kabaddi/badminton/table tennis/yoga – demonstration, practice of the skills, correction, involvement in game situation, teaching of rules of the game (For girls teaching M

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of Tennikoit)Teaching – Meaning, Scope and importance of Physical Education Teaching – Definition, Type of Tournaments Teaching – Physical Fitness and Health Education Construction and laying out of the track and field (*The girls will have Tennikoit and Throw Ball)

SEMESTER II

FUNDAMENTALS OF PLANT PATHOLOGY

SECTION-A

Introduction: Importance of plant diseases, scope and objectives of Plant Pathology. History of Plant Pathology with special reference to Indian work. Terms and concepts in Plant Pathology and Pathogenesis. Causes / factors affecting disease development: disease triangle and tetrahedron and classification of plant diseases. Important plant pathogenic organisms, different groups: fungi, bacteria, fastidious vascular bacteria, phytoplasmas, spiroplasmas, viruses, viroids, algae, protozoa, phanerogamic parasites and nematodes with examples of diseases caused by them. Diseases and symptoms due to abiotic causes.

SECTION-B

Fungi: general characters, definition of fungus, somatic structures, types of fungal thalli, fungal tissues, modifications of thallus, reproduction (asexual and sexual). Nomenclature, Binomial system of nomenclature, rules of nomenclature, classification of fungi. Key to divisions, subdivisions, orders and classes. Bacteria and mollicutes: general morphological characters. Basic methods of classification and reproduction. Viruses: nature, structure, replication and transmission. Study of phanerogamic plant parasites. Nematodes: General morphology and reproduction, classification, symptoms and nature of damage caused by plant nematodes (Heterodera, Meloidogyne, Anguina, Radopholus etc.)

SECTION-C

Growth and reproduction of plant pathogens. Liberation/dispersal and survival of plant pathogens. Types of parasitism and variability in plant pathogens. Pathogenesis. Role of enzymes, toxins and growth regulators in disease development. Defense mechanism in plants.

SECTION-D

Epidemiology: Factors affecting disease development. Principles and methods of plant disease management. Nature, chemical combination, classification, mode of action and formulations of fungicides and antibiotics.

CROP PHYSIOLOGY

Section-A:

Introduction to crop physiology and its importance in Agriculture; Plant cell: an Overview; Diffusion and osmosis; Absorption of water, transpiration and Stomatal Physiology;

Section-B:

Mineral nutrition of Plants: Functions and deficiency symptoms of nutrients, nutrient uptake mechanisms;

Section-C:

Photosynthesis: Light and Dark reactions, C₃, C₄ and CAM plants; Respiration: Glycolysis,
M

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TCA cycle and electron transport chain;

Section-D:

Plant growth regulators: Physiological roles and agricultural uses, Physiological aspects of growth and development of major crops: Growth analysis, Role of Physiological growth parameters in crop productivity.

FUNDAMENTALS OF ENTOMOLOGY

Section-A

History of Entomology in India. Classification of phylum Arthropoda into classes. [Relationship of class Insecta with other classes of Arthropoda](#). Systematics: Taxonomy – importance, history and development and binomial nomenclature. Definitions of Biotype, Sub-species, Species, Genus, Family and Order. Classification of class Insecta into Orders, Special emphasis to orders and families of Agricultural importance like **Orthoptera**: Acrididae, Tettigonidae, Gryllidae; **Dictyoptera**: Mantidae, Blattidae; **Odonata**; **Isoptera**: Termitidae; **Thysanoptera**: Thripidae; **Hemiptera**: Pentatomidae, Pyrrhocoridae, Lygaeidae, Cicadellidae, Delphacidae, Aphididae, Coccidae; **Neuroptera**: Chrysopidae; **Lepidoptera**: Pieridae, Noctuidae, Pyralidae, Gelechiidae, Arctiidae, Bombycidae; **Coleoptera**: Coccinellidae, Chrysomelidae, Curculionidae, Bruchidae; **Hymenoptera**: Tenthredinidae, Apidae, Trichogrammatidae, Ichneumonidae, Braconidae; **Diptera**: Cecidomyiidae, Culicidae, Muscidae, Tephritidae.

Section-B

Morphology: Structure and functions of insect cuticle and molting. Body segmentation. Structure and modifications of insect antennae, mouth parts, legs, Wing modifications and wing coupling apparatus. Structure of male and female genital organ. Metamorphosis and diapause in insects. Types of larvae and pupae. Structure and functions of digestive, circulatory, excretory, respiratory, nervous and reproductive system in insects. Types of reproduction in insects. Major sensory organs like simple and compound eyes, chemoreceptor.

Section-C

Insect Ecology: Introduction, Environment and its components. Effect of abiotic factors – temperature, moisture, humidity, rainfall, light. Effect of biotic factors – food competition, natural and environmental resistance. Major points related to dominance of class Insecta in Animal kingdom. Various categories of pests.

Section-D

Concept of IPM, Practices, scope and limitations of IPM. Classification of insecticides, toxicity of insecticides and formulations of insecticides. Chemical control- importance, hazards and limitations. Recent methods of pest control, repellents, antifeedants, hormones, attractants, gamma radiation. Insecticides Act 1968- Important provisions. Symptoms of poisoning, first aid and antidotes.

FUNDAMENTALS OF AGRICULTURAL ECONOMICS

SECTION-A

[Economics: Meaning, scope and subject matter, definitions, activities, approaches to economic analysis; micro and macro economics, positive and normative analysis. Nature of economic theory; rationality assumption, concept of equilibrium, economic laws as generalization of human behavior](#). Basic concepts: Goods and services, desire, want, demand, utility, cost and price, wealth, capital, income and welfare. Agricultural economics: meaning, importance, role of Agriculture in economic development. Agricultural planning and development in the country. Population: Malthusian theory, Elements of economic planning.

SECTION-B

M

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Demand: meaning, law of demand, schedule and demand curve, determinants, utility theory; law of diminishing marginal utility, equi-marginal utility principle. Consumer's equilibrium and derivation of demand curve, concept of consumer surplus. Elasticity of demand: concept and measurement of price elasticity, income elasticity and cross elasticity.

SECTION-C

Production: process, creation of utility, factors of production, input output relationship. *Laws of returns:* Law of variable proportions and law of returns to scale. *Cost:* concepts, short run and long run cost curves. Supply: Stock v/s supply, law of supply, schedule, supply curve, determinants of supply, elasticity of supply. Market structure: meaning and types of market, basic features of perfectly competitive and imperfect markets. Price determination under perfect competition; short run and long run equilibrium of firm and industry, shut down and break even points. *Distribution theory:* meaning, factor market and pricing of factors of production. Concepts of rent, wage, interest and profit.

SECTION-D

National income: Meaning and importance, circular flow, concepts of national income accounting and approaches to measurement, difficulties in measurement. Population: Importance, Malthusian and Optimum population theories, natural and socioeconomic determinants, current policies and programmes on population control. Money: Barter system of exchange and its problems, evolution, meaning and functions of money, classification of money, supply, general price index, inflation and deflation. Banking: Role in modern economy, types of banks, functions of commercial and central bank, credit creation policy. Agricultural and public finance: meaning, micro v/s macro finance, need for agricultural finance, public revenue and public expenditure. Tax: meaning, direct and indirect taxes, agricultural taxation, VAT. Economic systems: Concepts of economy and its functions, important features of capitalistic, socialistic and mixed economies, elements of economic planning

AGRICULTURAL MICROBIOLOGY

SECTION-A

Introduction. Microbial world: Prokaryotic and eukaryotic microbes. Bacteria: cell structure, chemoautotrophy, photoautotrophy, growth. Bacterial genetics: Genetic recombination- transformation, conjugation and transduction, plasmids, transposons.

SECTION-B

Role of microbes in soil fertility and crop production: Carbon, Nitrogen, Phosphorus and sulphur cycles.

SECTION-C

Biological nitrogen fixation- symbiotic, associative and aysmbiotic. *Azolla*, blue green algae and mycorrhiza. Rhizosphere and phyllosphere. Microbes in human welfare: silage production, biofertilizers, biopesticides, biofuel production and biodegradation of agro-waste.

SECTION-D

Introduction to mushroom cultivation; types of mushrooms; designing and construction of mushroom farm; composting (*Agaricus biosporus*; *Pleurotus spp.*, *Volvariella spp.*) spawn production.

FUNDAMENTALS OF GENETICS

SECTION-A

Pre and Post Mendelian concepts of heredity, Mendelian principles of heredity. Architecture M

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of chromosome; chromonemata, chromomeres, centromere, secondary constriction and telomere; special types of chromosomes. Chromosomal theory of inheritance. Cell cycle and cell division- mitosis and meiosis. Probability and Chi-square. Dominance relationships, Epistatic interactions with example

SECTION-B

Multiple alleles, pleiotropism and pseudoalleles. Sex determination and sex linkage, sex limited and sex influenced traits, Blood group genetics, Linkage and its estimation, crossing over mechanisms, chromosome mapping.

SECTION-C

Structural and numerical variations in chromosomes and their implications, Mutation, classification, methods of inducing mutations & CIB technique, mutagenic agents and induction of mutation. Qualitative & Quantitative traits, Polygenes and continuous variations, multiple factor hypothesis, Cytoplasmic inheritance. Genetic disorders.

SECTION-D

Nature, structure & replication of genetic material. Protein synthesis, transcription and translational mechanism of genetic material, Gene concept: Gene structure, function and regulation, Lac and Trp operons.

INTRODUCTION TO AGRICULTURAL EXTENSION EDUCATION

Section-A

Education: Meaning, definition & Types; Extension Education- meaning, definition, scope and process; objectives and principles of Extension Education; Extension Programme planning-Meaning, Process, Principles and Steps in Programme Development. Extension systems in India:

Section-B

Extension efforts in pre-independence era (Sriniketan, Marthandam, Firka Development Scheme, Gurgaon Experiment, etc.) and post-independence era (Etawah Pilot Project, Nilokheri Experiment, etc.); various extension/ agriculture development programmes launched by ICAR/Govt. of India (IADP, IAAP, HYVP, KVK, IVLP, ORP, ND, NATP, NAIP etc.), New trends in agriculture extension, [privatization extension](#), cyber extension/e-extension, expert system etc., [market-led extension](#), [farmer-led extension](#), Rural Development: concept, meaning, definition; [various rural development programmes launched by Govt. of India](#). Community Dev.-meaning, definition, concept & principles.

Section-C

Philosophy of C.D. Rural Leadership: concept and definition, types of leaders in rural context; extension administration: meaning and concept, principles and functions. Monitoring and evaluation: concept and definition, monitoring and evaluation of extension programmes; transfer of technology: [: concept and models, capacity building of extension personnel](#), extension teaching methods: meaning, classification, individual, group and mass contact methods.

Section-D

[ICT Applications in TOT \(New and Social Media\), media mix strategies; communication: meaning and definition](#); Principles and Functions of Communication, models and barriers to communication. Agriculture journalism; diffusion and adoption of innovation: concept and meaning, process and stages of adoption, adopter categories.

SOIL AND WATER CONSERVATION ENGINEERING

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SECTION-A

- 1) Soil Erosion Principles.
- 2) Erosivity and Erodibility
- 3) Factors affecting water erosion
- 4) Types of water erosion (Raindrop, sheet, rill and gully erosion)

SECTION-B

- 5) Gully classification
- 6) Gully control measures

SECTION-C

- 7) Factors affecting wind erosion
- 8) Wind erosion control measures (wind breaks and shelter belts)

SECTION-D

- 9) Universal Soil loss Equation for water erosion
- 10) Conservation measure for hill slopes
- 11) Conservation measures for agricultural lands

PRODUCTION TECHNOLOGY FOR FRUIT AND PLANTATION CROPS

Section-A

Importance and scope of fruit and plantation crop industry in India; High density planting; [Importance of rootstocks](#);

Section-B

Production technologies for the cultivation of major fruits-mango, [banana](#), citrus, grape, plum, almond, guava, litchi, papaya, pear, peach

Section-C

Minor fruits- pineapple, pomegranate, jackfruit, strawberry, [sapota](#), [apple](#), [walnut](#), [almond](#)

Section-D

[coconut](#), [arecanut](#), [cashew](#), [tea](#), [coffee](#) & [rubber](#)

FUNDAMENTALS OF PLANT PATHOLOGY LAB

Practical

Acquaintance with various laboratory equipments and microscopy. Collection and preservation of disease specimen. Preparation of media, isolation and Koch's postulates. General study of different structures of fungi. Study of symptoms of various plant diseases. [Staining and identification of plant pathogenic bacteria](#). Study of representative fungal genera. Transmission of plant viruses. Study of phanerogamic plant parasites. [Study of morphological features and identification of plant parasitic nematodes](#). [Sampling and extraction of nematodes from soil and plant material, preparation of nematode mounting](#). Study of fungicides and their formulations. Methods of pesticide application and their safe use. Calculation of fungicide sprays concentrations.

CROP PHYSIOLOGY LAB

Study of plant cells, structure and distribution of stomata, imbibitions, osmosis, plasmolysis, measurement

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of root pressure, rate of transpiration, Separation of photosynthetic pigments through paper chromatography, [Rate of transpiration](#), photosynthesis, respiration, tissue test for mineral nutrients, estimation of relative water content. [Measurement of photosynthetic CO₂ assimilation by Infra Red Gas Analyser \(IRGA\)](#).

FUNDAMENTALS OF ENTOMOLOGY LAB

Methods of collection and preservation of insects including immature stages; External features of Grasshopper; Types of insect antennae, mouthparts and legs; Wing venation, types of wings and wing coupling apparatus. Types of insect larvae and pupae; Dissection of digestive system in insects (Grasshopper); Dissection of male and female reproductive systems in insects (Grasshopper); Study of characters of orders Orthoptera, Dictyoptera, Odonata, Isoptera, Thysanoptera, Hemiptera, Lepidoptera, Neuroptera, Coleoptera, Hymenoptera, Diptera and their families of agricultural importance. Insecticides and their formulations. Pesticide appliances and their maintenance. Sampling techniques for estimation of insect population and damage.

AGRICULTURAL MICROBIOLOGY LAB

Practical

Introduction to microbiology laboratory and its equipments; Microscope- parts, principles of microscopy, resolving power and numerical aperture. Methods of sterilization. Nutritional media and their preparations. Enumeration of microbial population in soil- bacteria, fungi, actinomycetes. Methods of isolation and purification of microbial cultures. Isolation of *Rhizobium* from legume root nodule. Isolation of *Azotobacter* from soil. Isolation of *Azospirillum* from roots. [Isolation of BGA](#). Staining and microscopic examination of microbes. Study of spawn production for mushroom cultivation. Study about composting for mushroom cultivation.

FUNDAMENTALS OF GENETICS LAB

Practical

Study of microscope. Study of cell structure. Mitosis and Meiosis cell division. Experiments on monohybrid, dihybrid, trihybrid, test cross and back cross, [Practice on mitotic and meiotic cell division](#), Experiments on epistatic interactions including test cross and back cross, Experiments on probability and Chi-square test. Determination of linkage and cross-over analysis (through two point test cross and three point test cross data). Study on sex linked inheritance in *Drosophila*. Study of models on DNA and RNA structures.

INTRODUCTION TO AGRICULTURAL EXTENSION EDUCATION LAB

To get acquainted with university extension system. Group discussion- exercise; handling and use of audio visual equipments and digital camera and LCD projector; preparation and use of AV aids, preparation of extension literature – leaflet, booklet, folder, pamphlet news stories and success stories; Presentation skills exercise; micro teaching exercise; [A visit to village to understand the problems being encountered by the villagers/ farmers; to study organization and functioning of DRDA and other development departments at district level; visit to NGO and learning from their experience in rural development; understanding PRA techniques and their application in village development planning; exposure to mass media](#); Role of community radio and television studio for understanding the process of programme production; script writing, writing for print and electronic media, developing script for radio and television.

SOIL AND WATER CONSERVATION ENGINEERING LAB

Practical:

- 1) General Status of Soil Conservation in India
- 2) Calculation of erosion index
- 3) Estimation of soil loss
- 4) [Measurement of soil loss. Preparation of contour maps. Design of grassed water ways.](#)
- 5) Design of contour bunds
- 6) Design of graded bunds
- 7) Design of bench terracing system
- 8) Problems on wind erosion

COMMUNICATION SKILLS AND PERSONALITY DEVELOPMENT

Communication Skills: Structural and functional grammar; meaning and process of communication, verbal and non-verbal communication; listening and note taking, writing skills, oral presentation skills; field diary and lab record; indexing, footnote and bibliographic procedures. Reading and comprehension of general and technical articles, precise writing, summarizing, abstracting; individual and group presentations, impromptu presentation, public speaking; Group discussion. Organizing seminars and conferences.

COMMUNICATION SKILLS AND PERSONALITY DEVELOPMENT LAB

Practical

Listening and note taking, writing skills, oral presentation skills; field diary and lab record; indexing, footnote and bibliographic procedures. Reading and comprehension of general and technical articles, precise writing, summarizing, abstracting; individual and group presentations.

SEMESTER III

CROP PRODUCTION TECHNOLOGY-I (KHARIF CROPS)

Origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices and yield of *Kharif* crops, as per section.

Section-A

Cereals – rice, maize, sorghum, pearl millet and finger millet.

Section-B

Pulses-pigeonpea, mungbean and urdbean.

Section-C

Oilseeds- groundnut, and soybean; fibre crops- cotton & Jute.

Section-D

Forage crops-[maize](#), sorghum, [bajra](#), cowpea, cluster bean and [Napier-bajra hybrid](#)

ENVIRONMENTAL STUDIES AND DISASTER MANAGEMENT

Section- A

Environmental studies Definition, scope and importance, Natural Resources, Forest resources, Water resources, Mineral resources, Food resources, Energy resources, Land resources,

Section-B

Ecosystems-Concept of an ecosystem, Structure and function of an ecosystem, Biodiversity and its conservation, Value, Environmental Pollution, Solid Waste Management, Social Issues, Environmental ethics, Wasteland reclamation, Environment Protection Act.

Section-C

Air (Prevention and Control of Pollution) Act. Water (Prevention and control of Pollution) Act. Wildlife Protection Act. Forest Conservation Act.

Section-D

Issues involved in enforcement of environmental legislation. Public awareness, Environment and human health, Women and Child Welfare, Natural Disasters, Climatic change, Man Made Disasters, Disaster Management

AGRICULTURAL FINANCE AND CO-OPERATION

Section-A

Agricultural Finance- meaning, scope and significance, credit needs and its role in Indian agriculture. Agricultural credit: meaning, definition, need, classification. Credit analysis: 4 R's, and 3C's of credits.

Section-B

Sources of agricultural finance: institutional and non-institutional sources, commercial banks, social control and nationalization of commercial banks, Micro financing including KCC. Leadbank scheme, M

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RRBs, Scale of finance and unit cost.

Section-C

An introduction to higher financing institutions – RBI, NABARD, ADB, IMF, world bank. [Insurance and Credit Guarantee Corporation of India](#). [Cost of credit](#). [Recent development in agricultural credit](#), Preparation and analysis of financial statements – Balance Sheet and Income Statement. Basic guidelines for preparation of project reports. [Bank norms – SWOT analysis](#).

Section-D

Agricultural Cooperation – Meaning, brief history of cooperative development in India, objectives, principles of cooperation, significance of cooperatives in Indian agriculture. [Agricultural Cooperation in India- credit, marketing, consumer and multi-purpose cooperatives, farmers' service cooperative societies, processing cooperatives, farming cooperatives, cooperative warehousing; role of ICA, NCUI, NCDC, NAFED](#).

FARM POWER AND MACHINERY

Section-A

Farm power in India & Sources. IC engine & terminology, Working Principle of 2-stroke & 4-stroke engine & numerical problem.

Section-B

[Study of different components of I.C. engine, I.C. engine terminology and solved problems, Familiarization with different systems of I.C. engines: Air cleaning, cooling, lubrication, fuel supply and hydraulic control system of a tractor, Familiarization with Power transmission system : clutch, gear box, differential and final drive of a tractor, Tractor types, Cost analysis of tractor power and attached implement](#), Different system of tractor, Primary & Secondary implements, Implementation for intercultural operations, Mulcher

Section-C

Familiarization with sowing & planting equipments, Happy Seeder, Seed Drill, Calibration of Seed drill, & paddy transplanter, its mechanism, Direct seeding Rice (DSR) & some numerical problems.

Section-D

Plant protection equipment, Familiarization with Harvesting & Threshing equipment, Cost of operation of tractor & Machinery.

FUNDAMENTALS OF PLANT BREEDING

Section-A

Historical development, concept, nature and role of plant breeding, major achievements and future prospects; modes of reproduction and apomixis, self – incompatibility and male sterility – genetic consequences, cultivar options. Domestication, Acclimatization, introduction; Centres of origin/diversity.

Section-B

Genetics in relation to plant breeding, components of Genetic variation; Heritability and genetic advance; Genetic basis and breeding methods in self- pollinated crops – mass and pure line selection, hybridization

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techniques and handling of segregating population; Multiline concept. Concepts of population genetics and Hardy-Weinberg Law, Genetic basis and methods of breeding cross pollinated crops, modes of selection.

Section-C

Heterosis and inbreeding depression, development of inbred lines and hybrids, composite and synthetic varieties; Breeding methods in asexually propagated crops, clonal selection and hybridization; Wide hybridization and pre-breeding.

Section-D

Polyploidy in relation to plant breeding, mutation breeding-methods and uses; Biotechnological tools- DNA markers and marker assisted selection. Participatory plant breeding; Intellectual Property Rights, Patenting, Plant Breeders and Farmer's Rights.

PRODUCTION TECHNOLOGY FOR VEGETABLE AND SPICES

Section-A

Importance of vegetables & spices in human nutrition and national economy, [kitchen gardening](#), brief about origin, area, production, improved varieties and cultivation practices such as time of sowing, sowing, transplanting techniques, planting distance, fertilizer requirements, irrigation, weed management, harvesting, storage, physiological disorders, disease and pest control and seed production of important vegetable groups: Solanaceous, Cucurbitaceae. ([Tomato](#), [Brinjal](#), [Chilli](#), [Capsicum](#), [Cucumber](#), [Melons](#), [Gourds](#), [Pumpkin](#), [French bean](#), [Peas](#))

Section-B

Importance of vegetables & spices in human nutrition and national economy, brief about origin, area, production, improved varieties and cultivation practices such as time of sowing, sowing, transplanting techniques, planting distance, fertilizer requirements, irrigation, weed management, harvesting, storage, physiological disorders, disease and pest control and seed production of important vegetable groups: Cole ([Cabbage](#), [Cauliflower](#), [Knol-khol](#)), Root crops ([Carrot](#), [Raddish](#), [Beetroot](#)).

Section-C

Importance of vegetables & spices in human nutrition and national economy, brief about origin, area, production, improved varieties and cultivation practices such as time of sowing, sowing, transplanting techniques, planting distance, fertilizer requirements, irrigation, weed management, harvesting, storage, physiological disorders, disease and pest control and seed production of important vegetable groups: Bulb ([Onion](#), [Garlic](#)), Tuber ([Potato](#)).

Section-D

Importance of vegetables & spices in human nutrition and national economy, brief about origin, area, production, improved varieties and cultivation practices such as time of sowing, sowing, transplanting techniques, planting distance, fertilizer requirements, irrigation, weed management, harvesting, storage, physiological disorders, disease and pest control and seed production of important vegetable groups: Leafy ([Amaranth](#), [Palak](#)), [Perennial vegetables](#) and salad crops) and Spices.

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Section-A

Computer Programming, General Concepts, Documentation and Program Maintenance, Debugging programs, Errors. Introduction to Visual Basic, Java, Fortran, C/ C++, etc, concepts and standard input/output operations, Variables and Constants, Operators and Expressions, Flow of control, Inbuilt and User defined functions, programming techniques for agriculture/forestry.

Section-B

e-Agriculture, concepts, design and development. Application of innovative ways to use information and communication technologies (IT) in agriculture/forestry. ICT for Data Collection, formation of development programmes, monitoring and evaluation of Programmes.

Section-C

Computer Models in agriculture/forestry: statistical, weather analysis and crop simulation models, concepts, structure, inputs-outputs files, limitation, advantages and application of models for understanding plant processes, sensitivity, verification, calibration and validation. IT application for computation of water and nutrient requirement of crops, Computer-controlled devices (automated systems) for Agri-input management, Smartphone mobile apps in Agriculture for farm advises, market price, postharvest management etc; Geospatial technology, concepts, techniques, components and uses for generating valuable agri-information.

Section-D

Decision support systems, taxonomy, components, framework, classification and applications in agriculture/forestry, DSS, Agriculture Information/ Expert System, Soil Information Systems etc for supporting Farm decisions. Preparation of contingent crop-planning and crop calendars using IT tools.

STATISTICAL METHODS

Section-A

Introduction to Statistics and its Applications in Agriculture, Graphical Representation of Data, Measures of Central Tendency, [and Dispersion](#).

Section-B

[Definition of Probability, Addition and Multiplication Theorem \(without proof\). Simple Problems Based on Probability, Binomial & Poisson Distributions.](#) Definition of Correlation, Scatter Diagram. Karl Pearson's Coefficient of Correlation. Linear Regression Equations.

Section-C

Introduction to Test of Significance, One sample & two sample test t for Means, Chi-Square Test of Independence of Attributes in 2 x2 Contingency Table.

Section-D:

Introduction to Analysis of Variance, Analysis of One Way Classification. Introduction to Sampling Methods, Sampling versus Complete Enumeration, Simple Random Sampling with and without replacement. [Use of Random Number Tables for selection of Simple Random Sample.](#)

LIVESTOCK AND POULTRY MANAGEMENT

Section A

Role of livestock in the national economy. Housing principles, space requirements for different species of livestock and poultry. Management of calves, growing heifers and milch animals. Management of sheep, goat and swine. Incubation, hatching and brooding. Management of growers and layers.

Section-B

Important Indian and exotic breeds of cattle, buffalo, sheep, goat, swine and poultry. Improvement of farm animals and poultry.

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Section-C

Reproduction in farm animals and poultry, Digestion in livestock and poultry. Classification of feedstuffs. Proximate principles of feed. Nutrients and their functions. Feed ingredients for ration for livestock and poultry. Feed supplements and feed additives. Feeding of livestock and poultry.

Section-D

Introduction of livestock and poultry diseases. Prevention (including vaccination schedule) and control of important diseases of livestock and poultry.

CROP PRODUCTION TECHNOLOGY-I (KHARIF CROPS) LAB

Rice nursery preparation, transplanting of rice, sowing of soybean, pigeon-pea and mungbean, maize, groundnut and cotton, effect of seed size on germination and seedling vigour of kharif season crops, effect of sowing depth on germination of kharif crops, identification of weeds in kharif season crops, top dressing and foliar feeding of nutrients, study of yield contributing characters and yield calculation of kharif season crops, study of crop varieties and important agronomic experiments at experimental farm. study of forage experiments, morphological description of kharif season crops, visit to research centres of related crops.

ENVIRONMENTAL STUDIES AND DISASTER MANAGEMENT LAB

Pollution case studies. Case Studies- Field work: Visit to a local area to document environmental assets river/ forest/ grassland/ hill/ mountain, visit to a local polluted site-Urban/Rural/Industrial/ Agricultural, study of common plants, insects, birds and study of simple ecosystems-pond, river, hill slopes, etc.

AGRICULTURAL FINANCE AND CO-OPERATION LAB

Determination of most profitable level of capital use. Optimum allocation of limited amount of capital among different enterprise. Analysis of progress and performance of cooperatives using published data. Analysis of progress and performance of commercial banks and RRBs using published data. Visit to a commercial bank, cooperative bank and cooperative society to acquire firsthand knowledge of their management, schemes and procedures. Estimation of credit requirement of farm business – A case study. Preparation and analysis of balance sheet – A case study. Preparation and analysis of income statement – A case study. Appraisal of a loan proposal – A case study. Techno-economic parameters for preparation of projects. Preparation of Bankable projects for various agricultural products and its value added products. Seminar on selected topics.

FARM MACHINERY AND POWER LAB

Study of different Components of IC engine. To study air cleaning and cooling system of engine. Familiarization with clutch, transmission, differential and final drive of a tractor. Familiarization with lubrication and fuel supply system of engine. Familiarization with brake, steering, hydraulic control system of engine. Learning of tractor driving. Familiarization with operation of power tiller. Implements for hill agriculture. Familiarization with different types of primary and secondary tillage implements: mould plough, disc plough. Study of Mould Board plough, different parts, measurement, Plough size, and Horizontal & Vertical Suction. Study of Reversible Mould Board Plough, disc plough & disc harrow. Familiarization with seed cum fertilizer drill, Furrow openers, Seed metering mechanism & M

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calibration. Familiarization with different types of sprayers & dusters. Familiarization with Harvesting and Threshing machinery. Familiarization with planter, transplanter. Familiarization with different Intercultural equipment.

FUNDAMENTALS OF PLANT BREEDING LAB

Plant Breeder's kit, Study of germplasm of various crops. Study of floral structure of self pollinated and cross pollinated crops. Emasculation and hybridization techniques in self & crosspollinated crops. Consequences of inbreeding on genetic structure of resulting populations. Study of male sterility system. Handling of segregation populations. Methods of calculating mean, range, variance, standard deviation, heritability. Designs used in plant breeding experiment, analysis of Randomized Block Design. To work out the mode of pollination in a given crop and extent of natural out crossing. Prediction of performance of double cross hybrids

PRODUCTION TECHNOLOGY FOR VEGETABLE AND SPICES LAB

Identification of vegetables & spices crops and their seeds. Nursery raising. Direct seed sowing and transplanting. Study of morphological characters of different vegetables & spices. Fertilizer applications. Raising of nursery of vegetables & spices. Vegetables & spices seed extraction. Harvesting & preparation for market. Economics of vegetables and spices cultivation

AGRICULTURAL INFORMATICS LAB

Study of Computer Components, accessories, practice of important DOS Commands. Introduction of different operating systems such as windows, Unix, Linux, Creating, Files & Folders, File Management. Use of MS-WORD and MS Power point for creating, editing and presenting a scientific Document, Handling of Tabular data, animation, video tools, art tool, graphics, template & designs. MS-EXCEL - Creating a spreadsheet, use of statistical tools, writing expressions, creating graphs, analysis of scientific data, handling macros. MS-ACCESS: Creating Database, preparing queries and reports, demonstration of Agri-information system. Introduction to World Wide Web (WWW) and its components, creation of scientific website, presentation and management agricultural information through web. Introduction of various programming languages such as Visual Basic, Java, Fortran, C, C++, and their components Hands on practice on writing small programmes. Hands on practice on Crop Simulation Models (CSM), DSSAT/Crop-Info/CropSyst/ Wofost. Preparation of Inputs file for CSM and study of model outputs, computation of water and nutrient requirements of crop using CSM and IT tools. Use of smart phones and other devices in agro-advisory and dissemination of market information. Introduction of Geospatial Technology, demonstration of generating information important for Agriculture. Hands on practice on preparation of Decision Support System.

STATISTICAL METHODS LAB

Graphical Representation of Data. Measures of Central Tendency (Ungrouped data) with Calculation of Quartiles, Deciles & Percentiles. Measures of Central Tendency (Grouped data) with Calculation of Quartiles, Deciles & Percentiles. Measures of Dispersion (Ungrouped Data). Measures of Dispersion (Grouped Data). Moments, Correlation & Regression Analysis. Application of One Sample t-test. Application of Two Sample Fisher's t-test. Chi-Square test of Goodness of Fit. Chi-Square test of Independence of Attributes for 2 x 2 contingency table. Analysis of Variance One Way Classification. Analysis of one way. [Selection of random sample using Simple Random Sampling.](#)

LIVESTOCK & POULTRY MANAGEMENT LAB

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External body parts of cattle, buffalo, sheep, goat, swine and poultry. Handling and restraining of livestock. Identification methods of farm animals and poultry. Visit to IDF and IPF to study breeds of livestock and poultry and daily routine farm operations and farm records. Judging of cattle, buffalo and poultry. Culling of livestock and poultry. Planning and layout of housing for different types of livestock. Computation of rations for livestock. Formulation of concentrate mixtures. Clean milk production, milking methods. Hatchery operations, incubation and hatching equipments. Management of chicks, growers and layers. Debeaking, dusting and vaccination. Economics of cattle, buffalo, sheep, goat, swine and poultry production.

MRSPTU

SEMESTER IV**CROP PRODUCTION TECHNOLOGY-II (RABI CROPS)**

Origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices and yield of rabi crops as per section:

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Section-A

Cereals –wheat and barley, pulses-chickpea, lentil, peas.

Section-B

Oilseeds-rapeseed, mustard and sunflower

Section-C

Sugar crops-sugarcane; medicinal and aromatic crops-mentha, lemon grass and citronella

Section-D

Forage crops-berseem, lucerne and oat.

PROBLEMATIC SOILS AND THEIR MANAGEMENT

Section-A

Soil quality and health, Distribution of Waste land and problem soils in India, their Categorization based on properties. Problematic soils under different Agro-ecosystems.

Section-B

Reclamation and management of Saline and sodic soils, Acid soils, Acid Sulphate soils, Eroded and Compacted soils, Flooded soils, Polluted soils. Multipurpose tree species, bio remediation through MPTs of soils.

Section-C

Remote sensing and GIS in diagnosis and management of problem soils. land capability and classification, land suitability classification.

Section-D

Irrigation water – quality and standards, utilization of saline water in agriculture.

PRODUCTION TECHNOLOGY OF FRUIT AND PLANTATION CROPS

Section-A

Importance and scope of fruit and plantation crop industry in India, Importance of rootstocks.

Section-B

Production technologies for the cultivation of major fruits-mango, banana, citrus, grape, guava, litchi, papaya, sapota, apple, pear, peach, walnut, almond.

Section-C

Minor fruits- date, ber, pineapple, pomegranate, jackfruit, strawberry

Section-D

Plantation crops-coconut, arecanut, cashew, tea, coffee & rubber.

FARMING SYSTEM AND SUSTAINABLE AGRICULTURE

Section-A

Farming System-scope, importance, and concept, Types and systems of farming system and factors affecting types of farming, Farming system components and their maintenance

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Section-B

Cropping system and pattern, multiple cropping system, Efficient cropping system and their evaluation, Allied enterprises and their importance, Tools for determining production and efficiencies in cropping and farming system

Section-C

Sustainable agriculture-problems and its impact on agriculture, indicators of sustainability, adaptation and mitigation, conservation agriculture strategies in agriculture, HEIA, LEIA and LEISA and its techniques for sustainability.

Section-D

Integrated farming system-historical background, objectives and characteristics, components of IFS and its advantages, Site specific development of IFS model for different agro-climatic zones, resource use efficiency and optimization techniques, Resource cycling and flow of energy in different farming system, farming system and environment, Visit of IFS

INTRODUCTORY AGRO-METEOROLOGY & CLIMATE CHANGE

Section-A

Meaning and scope of agricultural meteorology. Earth atmosphere- its composition, extent and structure; Atmospheric weather variables; Atmospheric pressure, its variation with height; Wind, types of wind, daily and seasonal variation of wind speed, cyclone, anticyclone, land breeze and sea breeze; Nature and properties of solar radiation, solar constant, depletion of solar radiation, short wave, long-wave and thermal radiation, net radiation, albedo.

Section-B

Atmospheric temperature, temperature inversion, lapse rate, daily and seasonal variations of temperature, vertical profile of temperature, Energy balance of earth; Atmospheric humidity, concept of saturation, vapour pressure, process of condensation, formation of dew, fog, mist, frost, cloud; Precipitation, process of precipitation, types of precipitation such as rain, snow, sleet, and hail.

Section-C

Cloud formation and classification; Artificial rainmaking. Monsoon- mechanism and importance in Indian agriculture, Weather hazards - drought, floods, frost, tropical cyclones and extreme weather conditions such as heat-wave and cold-wave.

Section-D

Agriculture and weather relations; Modifications of crop microclimate, climatic normals for crop and livestock production. Weather forecasting- types of weather forecast and their uses. Climate change, climatic variability, global warming, causes of climate change and its impact on regional and national Agriculture.

AGRICULTURAL MARKETING, TRADE AND PRICES

Section-A

Agricultural Marketing: Concepts and definitions of market, marketing, agricultural marketing, market structure, [marketing mix and market segmentation](#), classification and characteristics of agricultural markets ; demand, supply and producer's surplus of agri-commodities: nature and determinants of M

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demand and supply of farmproducts, producer's surplus – meaning and its types, marketable and marketed surplus, factors affecting marketable surplus of agri-commodities.

Section-B

product life cycle (PLC) and competitive strategies: Meaning and stages in PLC; characteristics of PLC; strategies in different stages of PLC; pricing and promotion strategies: pricing considerations and approaches – cost based and competition based pricing; market promotion – advertising, personal selling, sales promotion and publicity – their meaning and merits & demerits; marketing process and functions: Marketing process-concentration, dispersion and equalization; exchange functions – buying and selling; physical functions – storage, transport and processing; facilitating functions – packaging, branding, grading, quality control and labeling (Agmark); Market functionaries and marketing channels.

Section-C

Types and importance of agencies involved in agricultural marketing; meaning and definition of marketing channel; number of channel levels; marketing channels for different farm products; Integration, efficiency, costs and price spread: Meaning, definition and types of market integration; marketing efficiency; marketing costs, margins and price spread; factors affecting cost of marketing; reasons for higher marketing costs of farm commodities; ways of reducing marketing costs.

Section-D

Role of Govt. in agricultural marketing: Public sector institutions- CWC, SWC, FCI, CACP & DMI – their objectives and functions cooperative marketing in India; Risk in marketing: Types of risk in marketing; speculation & hedging; an overview of futures trading; Agricultural prices and policy: Meaning and functions of price; administered prices; need for agricultural price policy; Trade: Concept of International Trade and its need, theories of absolute and comparative advantage. GATT and WTO; Agreement on Agriculture (AoA) and its implications on Indian agriculture; IPR.

RENEWABLE ENERGY & GREEN TECHNOLOGY

Section-A

Classification of energy sources and their contribution in Agricultural sector. Briquettes and uses of briquettes.

Section-B

Biomass utilization for bio-fuel production and their application, Biogas, Bio-alcohol, Biodiesel and bio-oil production and their utilization as bio-energy resources.

Section-C

Introduction to solar energy, Collection and their applications, Solar energy Gadgets, Solar cooker, solar water heater.

Section-D

Application of Solar Energy; Solar drying, Solar pond, Solar pump, Solar distillation, Solar photo-voltaic system and their application. Introduction to wind energy, types and their application.

PRINCIPLES OF SEED TECHNOLOGY

Section- A

Seed and seed technology: introduction, definition and importance. Deterioration causes of crop varieties and their control; Maintenance of genetic purity during seed production. Seed quality-

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Definition, Characters of good quality seed, different classes of seed. Foundation and certified seed production of important cereals, pulses, oilseeds, fodder and vegetables.

Section-B

Seed certification, phases of certification, procedure for seed certification, field inspection. Seed Act and Seed Act enforcement. Duty and powers of seed inspector, offences and penalties. Seeds Control Order 1983, Varietal Identification through Grow Out Test and Electrophoresis, Molecular and Biochemical test. Detection of genetically modified crops, Transgene contamination in non-GM crops, GM crops and organic seed production.

Section-C

Seed drying, processing and their steps, seed testing for quality assessment, seed treatment, its importance, method of application and seed packing. Seed storage; general principles, stages and factors affecting seed longevity during storage. Measures for pest and disease control during storage.

Section-D

Seed marketing: structure and organization, sales, generation activities, promotional media. Factors affecting seed marketing, Role of WTO and OECD in seed marketing. Private and public sectors and their production and marketing strategies.

PRODUCTION TECHNOLOGY FOR ORNAMENTAL CROPS, MAPS AND LANDSCAPING

Section-A

Importance and scope of ornamental crops, medicinal and aromatic plants and landscaping. Principles of landscaping. Landscape uses of trees, shrubs and climbers.

Section-B

Production technology of important cut flowers like rose, gerbera, carnation, lily and orchids under protected conditions and gladiolus, tuberose, chrysanthemum under open conditions.

Section-C

Package of practices for loose flowers like marigold and jasmine under open conditions. Production technology of important medicinal plants like ashwagandha, asparagus, aloe, costus, Cinnamomum, periwinkle, isabgol.

Section-D

Aromatic plants like mint, lemongrass, citronella, palmarosa, ocimum, rose geranium, vetiver. Processing and value addition in ornamental crops and MAPs produce.

FUNDAMENTALS OF PLANT BIOTECHNOLOGY

SECTION-A

Concepts and applications of plant biotechnology Scope: embryo culture, anther culture, pollen culture, organ culture, cell suspension culture, callus culture, ovule culture and their applications. Michaelis & Menten and Line Weaver Burk equation & plots; Introduction to allosteric enzymes. Nucleic acids: Importance and classification; Structure of Nucleotides, A, B & Z DNA; RNA: Types and Secondary & Tertiary structure. Metabolism of carbohydrates: Glycolysis, TCA cycle, Glyoxylate cycle, Electron transport chain. Metabolism of lipids: Beta oxidation, Biosynthesis of fatty acids.

SECTION-B

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Micro-propagation methods; organogenesis and embryogenesis, Synthetic seeds and their significance; somatic hybridization and cybrids, [Embryo rescue and its significance](#), [Somaclonal variation and its use in crop improvement](#), [cryo-preservation](#).

SECTION-C

Introduction to recombinant DNA methods: physical (Gene gun method), chemical (PEG mediated) and *Agrobacterium* mediated gene transfer methods, [Transgenics and its importance in crop improvement](#).

SECTION-D

PCR techniques and its applications; [RFLP, RAPD, SSR; Marker Assisted Breeding in crop improvement](#); [Biotechnology regulations](#).

CROP PRODUCTION TECHNOLOGY-II (RABI CROPS) LAB

Sowing methods of wheat and sugarcane, identification of weeds in rabi season crops, study of morphological characteristics of rabi crops, study of yield contributing characters of rabi season crops, yield and juice quality analysis of sugarcane, study of important agronomic experiments of rabi crops at experimental farms. Study of rabi forage experiments, oil extraction of medicinal crops, visit to research stations of related crops.

SEED TECHNOLOGY LAB

Seed propagation. Scarification and stratification of seeds. Propagation methods for fruit and plantation crops. Description and identification of fruit. Preparation of plant bio regulators and their uses, Important pests, diseases and physiological disorders of above fruit and plantation crops, Visit to commercial orchards

INTRODUCTORY AGRO-METEOROLOGY & CLIMATE CHANGE LAB

Practical:

Visit of Agrometeorological Observatory, site selection of observatory, exposure of instruments and weather data recording. Measurement of total, shortwave and longwave radiation, and its estimation using Planck's intensity law. Measurement of albedo and sunshine duration, computation of Radiation Intensity using BSS. Measurement of maximum and minimum air temperatures, its tabulation, trend and variation analysis. Measurement of soil temperature and computation of soil heat flux. Determination of vapor pressure and relative humidity. Determination of dew point temperature. Measurement of atmospheric pressure and analysis of atmospheric conditions. Measurement of wind speed and wind direction, preparation of wind rose. Measurement, tabulation and analysis of rain. Measurement of open pan evaporation and evapotranspiration. Computation of PET and AET.

AGRICULTURAL MARKETING, TRADE AND PRICES LAB

[Plotting and study of demand and supply curves and calculation of elasticities](#); Study of relationship between market arrivals and prices of some selected commodities; Computation of marketable and marketed surplus of important commodities; Study of price behaviour over time for some selected commodities; [Construction of index numbers](#); To study various marketing functions performed by different M

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agencies, identification of marketing channels for selected commodity, collection of data regarding marketing costs, margins and price spread and presentation of report in the class. [Visit to market institutions – NAFED, SWC, CWC, cooperative marketing society, etc. to study their organization and functioning; Application of principles of comparative advantage of international trade.](#)

RENEWABLE ENERGY & GREEN TECHNOLOGY LAB

- To study biogas plants.
- To study Gasifiers.
- To study the production process of bio diesel.
- To study briquetting machine.
- To study the production process of bio-fuels.
- To study soar cooker.
- To study solar drying system.
- To study solar distillation.
- To study the performance of wind mill.

PRINCIPLES OF SEED TECHNOLOGY LAB

Seed production in major cereals: Wheat, Rice, Maize, Sorghum, [and Bajra](#). Seed production in major pulses: Urd, Mung, Pigeonpea, Lentil, Gram, Field bean, pea. Seed production in major oilseeds: Soybean, Sunflower, Rapeseed, Groundnut and Mustard. Seed production in important vegetable crops: Solanaceous, Cruciferous, Malvaceous, Amaryllidaceous and Cucurbitaceous. Seed sampling and testing: Physical purity, germination, viability, etc. Seed and seedling vigour test. Genetic purity test: Grow out test. Seed certification: Procedure, Field inspection and preparation of field inspection report.

PRODUCTION TECHNOLOGY FOR ORNAMENTAL CROPS, MAPS AND LANDSCAPING LAB

Identification of Ornamental plants. Identification of Medicinal and Aromatic Plants. Nursery bed preparation and seed sowing. Training and pruning of Ornamental plants. Planning and layout of garden. Bed preparation and planting of MAP. Protected structures – care and maintenance. Intercultural operations in flowers and MAP. Harvesting and post harvest handling of cut and loose flowers. Processing of MAP. Visit to commercial flower/MAP unit.

PROBLAMATIC SOILS AND THEIR MANAGEMENT LAB

- Characterization of acid, acid sulfate, salt-affected and calcareous soils.
- Determination of cations (Na^+ , K^+ , Ca^{++} and Mg^{++}) in irrigation water and soil samples.
- Determination of anions (Cl^- , SO_4^{--} , CO_3^{--} and HCO_3^-) in irrigation waters and soil samples.
- Determination of CaCO_3 in calcareous soils.
- Lime requirements of acid soil and gypsum requirements of sodic soil.

Computation of SAR and RSC of irrigation water

FUNDAMENTALS OF PLANT BIOTECHNOLOGY LAB

MRSPTU B.SC. (HONS.) AGRICULTURE SYLLABUS 2021 BATCH ONWARDS

Sterilization techniques. Composition of various tissue culture media and preparation of stock solutions for MS nutrient medium. Callus induction from various explants. Micropropagation, hardening and acclimatization. Demonstration of isolation and quantification of nucleic acids. Demonstration of gel electrophoresis techniques and DNA finger printing. Demonstration of gene transfer techniques.

Elective

Agrochemicals

SECTION-A

An introduction to agrochemicals, their type and role in agriculture, effect on environment, soil, human and animal health, merits and demerits of their uses in agriculture, management of agrochemicals for sustainable agriculture. Herbicides-Major classes, properties and important herbicides. Fate of herbicides

SECTION-B

Fungicides - Classification – Inorganic fungicides - characteristics, preparation and use of sulfur and copper, Mode of action-Bordeaux mixture and copper oxychloride. Organic fungicides- Mode of action-Dithiocarbamates-characteristics, preparation and use of Zineb and maneb. Systemic fungicides- Benomyl, carboxin, oxycarboxin, Metalaxyl, Carbendazim, characteristics and use.

SECTION-C

Introduction and classification of insecticides: inorganic and organic insecticides Organochlorine, Organophosphates, Carbamates, Synthetic pyrethroids, Neonicotinoids, Biorationals, Insecticide Act and rules, Insecticides banned, withdrawn and restricted use, Fate of insecticides in soil & plant. IGRs Biopesticides, Reduced risk insecticides, Botanicals, plant and animal systemic insecticides their characteristics and uses.

SECTION-D

Fertilizers and their importance; Nitrogenous fertilizers: Feedstocks and Manufacturing of ammonium sulphate, ammonium nitrate, ammonium chloride, urea. Slow release N-fertilizers. Phosphatic fertilizers: feedstock and manufacturing of single superphosphate. Preparation of bone meal and basic slag. Potassic fertilizers: Natural sources of potash, manufacturing of potassium chloride, potassium sulphate and potassium nitrate. Mixed and complex fertilizers: Sources and compatibility-preparation of major, secondary and micronutrient mixtures. Complex fertilizers: Manufacturing of ammonium phosphates, nitrophosphates and NPK complexes. Fertilizer control order. Fertilizer logistics and marketing. Plant bio-pesticides for ecological agriculture, Bio-insect repellent.

COMMERCIAL PLANT BREEDING

SECTION-A

Types of crops and modes of plant reproduction. Line development and maintenance of breeding in self and cross pollinated crops (A/B/R and two line system) for development of hybrids and seed production. Genetic purity test of commercial hybrids.

SECTION-B

Advances in hybrid seed production of maize, rice, sorghum, pearl millet, castor, sunflower, cotton pigeon pea, Brassica etc. Quality seed production of vegetable crops under open and protected environment.

SECTION-C

MRSPTU B.SC. (HONS.) AGRICULTURE SYLLABUS 2021 BATCH ONWARDS

Alternative strategies for the development of the line and cultivars: haploid inducer, tissue culture techniques and biotechnological tools.

SECTION-D

IPR issues in commercial plant breeding: DUS testing and registration of varieties under PPV & FR Act. Variety testing, release and notification systems in India. Principles and techniques of seed production, types of seeds, quality testing in self and cross pollinated crops.

BIOPESTICIDES AND BIOFERTILIZERS

SECTION-A

History and concept of biopesticides. Importance, scope and potential of biopesticide. Definitions, concepts and classification of biopesticides viz. pathogen, botanical pesticides, and biorationals.

SECTION-B

Botanicals and their uses. Mass production technology of bio-pesticides. Virulence, pathogenicity and symptoms of entomopathogenic pathogens and nematodes. Methods of application of biopesticides. Methods of quality control and Techniques of biopesticides. Impediments and limitation in production and use of biopesticide.

SECTION-C

Biofertilizers - Introduction, status and scope. Structure and characteristic features of bacterial biofertilizers- *Azospirillum*, *Azotobacter*, *Bacillus*, *Pseudomonas*, *Rhizobium* and *Frankia*; Cynobacterial biofertilizers- *Anabaena*, *Nostoc*, *Hapalosiphon* and fungal biofertilizers- AM mycorrhiza and ectomycorrhiza. Nitrogen fixation -Free living and symbiotic nitrogen fixation. Mechanism of phosphate solubilization and phosphate mobilization, K solubilization.

SECTION-D

Production technology: Strain selection, sterilization, growth and fermentation, mass production of carrier based and liquid biofertilizers. FCO specifications and quality control of biofertilizers. Application technology for seeds, seedlings, tubers, sets etc. Biofertilizers -Storage, shelf life, quality control and marketing. Factors influencing the efficacy of biofertilizers.

MICRO-PROPAGATION TECHNOLOGIES

SECTION-A

Introduction, History, Advantages and limitations; Types of cultures (seed, embryo, organ, callus, cell),

SECTION-B

Stages of micropropagation, Axillary bud proliferation (Shoot tip and meristem culture, bud culture), Organogenesis (callus and direct organ formation),

SECTION-C

Somatic embryogenesis, cell suspension cultures,

SECTION-D

Production of secondary metabolites, Somaclonal variation, Cryopreservation

WEED MANAGEMENT

Section-A

MRSPTU B.SC. (HONS.) AGRICULTURE SYLLABUS 2021 BATCH ONWARDS

Introduction to weeds, characteristics of weeds their harmful and beneficial effects on ecosystem. Classification, reproduction and dissemination of weeds.

Section-B

Herbicide classification, concept of adjuvant, surfactant, herbicide formulation and their use. Introduction to mode of action of herbicides and selectivity.

Section-C

Allelopathy and its application for weed management. Bio-herbicides and their application in agriculture. Concept of herbicide mixture and utility in agriculture. Herbicide compatibility with agro-chemicals and their application.

Section-D

Integration of herbicides with non chemical methods of weed management. Herbicide Resistance and its management.

SYSTEM SIMULATION AND AGRO-ADVISORY

SECTION-A

System Approach for representing soil-plant-atmospheric continuum, system boundaries, Crop models, concepts & techniques, types of crop models, data requirements, relational diagrams. Evaluation of crop responses to weather elements;

SECTION-B

Elementary crop growth models; calibration, validation, verification and sensitivity analysis. Potential and achievable crop production- concept and modelling techniques for their estimation. Crop production in moisture and nutrients limited conditions; components of soil water and nutrients balance.

SECTION-C

Weather forecasting, types, methods, tools & techniques, forecast verification; Value added weather forecast, ITK for weather forecast and its validity; Crop-Weather Calendars;

SECTION-D

Preparation of agro-advisory bulletin based on weather forecast. Use of crop simulation model for preparation of Agro-advisory and its effective dissemination.

AGROCHEMICALS LAB

Sampling of fertilizers and pesticides. Pesticides application technology to study about various pesticides appliances. Quick tests for identification of common fertilizers. Identification of anion and cation in fertilizer. Calculation of doses of insecticides to be used. To study and identify various formulations of insecticide available in market. Estimation of nitrogen in Urea. Estimation of water soluble P₂O₅ and citrate soluble P₂O₅ in single super phosphate. Estimation of potassium in Murexite of Potash/ Sulphate of Potash by flame photometer. Determination of copper content in copper oxychloride. Determination of sulphur content in sulphur fungicide. Determination of thiram. Determination of ziram content.

COMMERCIAL PLANT BREEDING LAB

Floral biology in self and cross pollinated species, selfing and crossing techniques. Techniques of seed production in self and cross pollinated crops using A/B/R and two line system. Learning techniques in hybrid seed production using male-sterility in field crops. Understanding the difficulties in hybrid seed production, Tools and techniques for optimizing hybrid seed production. Concept of rouging in seed M

MRSPTU B.SC. (HONS.) AGRICULTURE SYLLABUS 2021 BATCH ONWARDS

production plot. Concept of line its multiplication and purification in hybrid seed production. Role of pollinators in hybrid seed production. Hybrid seed production techniques in sorghum, pearl millet, maize, rice, rapeseed-mustard, sunflower, castor, pigeon pea, cotton and vegetable crops. Sampling and analytical procedures for purity testing and detection of spurious seed. Seed drying and storage structure in quality seed management. Screening techniques during seed processing viz., grading and packaging. Visit to public private seed production and processing plants.

BIOPESTICIDES AND BIOFERTILIZERS LAB

Isolation and purification of important biopesticides: *Trichoderma Pseudomonas, Bacillus, Metarhizium* etc. and its production. Identification of important botanicals. Visit to biopesticide laboratory in nearby area. Field visit to explore naturally infected cadavers. Identification of entomopathogenic entities in field condition. Quality control of biopesticides. Isolation and purification of *Azospirillum, Azotobacter, Rhizobium*, P-solubilizers and cyanobacteria. Mass multiplication and inoculum production of biofertilizers. Isolation of AM fungi - Wet sieving method and sucrose gradient method. Mass production of AM inoculants.

MICRO-PROPAGATION TECHNOLOGY LAB

Identification and use of equipments in tissue culture. Laboratory, Nutrition media composition, sterilization techniques for media, containers and small instruments, sterilization techniques for explants, Preparation of stocks and working solution, Preparation of working medium, Culturing of explants: Seeds, shoot tip and single node, Callus induction, Induction of somatic embryos regeneration of whole plants from different explants, Hardening procedures.

WEED MANAGEMENT LAB

Techniques of weed preservation. Weed identification and their losses study. Biology of important weeds. Study of herbicide formulations and mixture of herbicide. Herbicide and agrochemicals study. Shift of weed flora study in long term experiments. Study of methods of herbicide application, spraying equipments. Calculations of herbicide doses and weed control efficiency and weed index.

SYSTEM SIMULATION AND AGRO-ADVISORY LAB

Preparation of crop weather calendars. Preparation of agro-advisories based on weather forecast using various approaches and synoptic charts. Working with statistical and simulation models for crop growth. Potential & achievable production; yield forecasting, insect & disease forecasting models. Simulation with limitations of water and nutrient management options. Sensitivity analysis of varying weather and crop management practices. Use of statistical approaches in data analysis and preparation of historical, past and present meteorological data for medium range weather forecast. Feedback from farmers about the agro advisory.



MINUTES OF 4th MEETING OF FACULTY OF ENGG. & TECH. HELD ON 27.08.2021

A pre-scheduled 4th Meeting of Faculty of Engineering & Technology of Maharaja Ranjit Singh Punjab Technical University, Bathinda was held on 27.08.2021 at 10:30 AM onwards in online mode. The following members were present:

- | | |
|---|--|
| 1. Dr. MANINDER SINGH
Prof. & Head, Department of CSE Thapar IET, Patiala
(98156-08309) msingh@thapar.edu | for Dean Faculty of Engg. & Tech.
Chairperson |
| 2. Dr. Rajesh Gupta
Department of Mechanical Engg GZSCCET, MRSPTU Bathinda,
(94631-35222).rg91@rediffmail.com | Member |
| 3. Dr. ANUPAM KUMAR
Head, Department of Textile Engg GZSCCET, MRSPTU Bathinda
(87250-72426) textilegzscetbti@gmail.com | Member |
| 4. Dr. RAKESH KUMAR
Head, Department of Civil Engg GZSCCET, MRSPTU Bathinda
(75891-96148) rkumar_s@rediffmail.com | Member |
| 5. Dr. NEERAJ GILL
Head, Deptt. of Electronics & Comm Engg GZSCCET, MRSPTU Bathinda
(94646-62132) neeraj.ece@mrsptu.ac.in | Member |
| 6. Dr. DINESH KUMAR
Head, Department of Computer Science & Engg. GZSCCET, MRSPTU Bathinda
(87250-72422) cse.gzscet@gmail.com | Member |
| 7. Dr. Savina Bansal
Department of Electronics & Comm. Engg. GZSCCET, MRSPTU Bathinda
(81466-00954) savina.bansal@gmail.com | Member |
| 8. Dr. Rakesh Kumar Bansal
Department of Electronics & Comm. Engg GZSCCET, MRSPTU Bathinda
(94630-00954) rkbansal@mrsptu.ac.in | Member |
| 9. Dr. Sanjiv Kumar Aggarwal
Department of Civil Engg. GZSCCET, MRSPTU Bathinda
(94780-22281) sanjiv_aggarwal@rediffmail.com | Member |
| 10. Dr. Balwinder Singh Sidhu
Department of Mechanical Engg. GZSCCET, MRSPTU Bathinda
(87250-72415) drbwssidhu07@gmail.com | Member |
| 11. Dr. Paramjeet Singh
Department of Computer Science & Engg. GZSCCET, MRSPTU Bathinda
(87250-72459) param2009@yahoo.com | Member |
| 12. Dr. Shaveta Rani
Department of Computer Science & Engg. GZSCCET, MRSPTU Bathinda
(98885-85202) garg_shavy@yahoo.com | Member |

- | | |
|--|------------------|
| 13. Dr. Manjeet Bansal
Department of Civil Engg. GZSCCET, MRSPTU Bathinda
(98151-26102) push_kar5@yahoo.com | Member |
| 14. Dr. Naresh Kumar Garg
Department of Computer Science & Engg. GZSCCET, MRSPTU Bathinda
(94630-77886) naresh2834@rediffmail.com | Member |
| 15. Dr. Devanand Uttam
Department of Textile Engg. GZSCCET, MRSPTU Bathinda
(94172-33925) d_a_uttam@yahoo.co.in | Member |
| 16. Dr. Tejinder Pal Singh Sarao
Department of Mechanical Engg. Baba Farid CET, Deon, Bathinda
(95011-15438) hodmebfcet@gmail.com | Member |
| 17. Dr. Jayoti Arora Bansal
Department of Computer Sc & Engg Baba Farid CET, Deon, Bathinda
(94011-15405) dean.bfcet@gmail.com | Member |
| 18. Prof. Vivek Kaundal
Department of Mechanical Engg. GZSCCET, MRSPTU Bathinda
(94171-93018) vivkris@mrsptu.ac.in | Member |
| 19. Prof. Jasvir Singh Tiwana
Head, Department of Mechanical Engg. GZSCCET, MRSPTU Bathinda
(94175-42454) jstiwana1@rediffmail.com | Member |
| 20. Dr. Rajiv Kumar Garg
Professor (HAG), Deptt. of Mechanical Engg. National Institute of Technology,
Jalandhar (94175-49528) rajivgarg1968@gmail.com | Member |
| 21. Dr. Amod Kumar
Professor, Deptt. of Electronics & Comm. Engg. NITTTR Chandigarh
(98725-16830) csioamod@yahoo.com | Member |
| 22. Dr. Neeraj Kumar
Professor, Deptt. of Computer Science & Engg. Thapar Inst. of Engg. & Tech.,
Patiala (88725-40189) neeraj.kumar@thapar.edu | Member |
| 23. Dr. Dhirendra Singhal
Professor, Deptt of Civil Engg., DCR Univ. of Science & Technology, Murthal
(94663-57861) singhald62@rediffmail.com | Member |
| 24. Dr. Rakesh Kumar
Professor, Deptt. of Aerospace Engg. Punjab Engineering College,
Chandigarh (98782-15676) rakpec@gmail.com | Member |
| 25. Dr. Ajay Bansal
Professor, Deptt. of Chemical Engg. National Institute of Technology,
Jalandhar (94172-23839) bansala@nitj.ac.in | Member |
| 26. Dr. Sarbjeet Kaur Bath
Head, Department of Electrical Engg. GZSCCET, MRSPTU Bathinda
(94638-36070) sjkbath77@gmail.com | Member Secretary |

At the outset, after verifying quorum of meeting, the Chairperson welcomed the members attending 4th Meeting of Faculty of Engineering & Technology of MRSPTU, Bathinda in online/blended mode. Thereafter, he asked Member Secretary to take up agenda items one by one for discussion. After detailed deliberations, the following decisions were arrived at unanimously:

S. Bath

ITEM 4.01	TO APPROVE THE MINUTES OF 6 TH MEETING OF BOARD OF STUDIES IN AERONAUTICAL & AEROSPACE ENGG. HELD ON 11.06.2021
DECISION	Approved
ITEM 4.02	APPROVAL OF SYLLABI OF UG-ENGG. PROGRAMMES
ITEM 4.02.01	Scheme and Syllabus of B. Tech. (Aerospace Engg.), 5 th -6 th Sem. for Batch 2K19 onwards
ITEM 4.02.02	Syllabus of B. Tech. (Civil Engg.), 7 th - 8 th Sem. for Batch 2K18
ITEM 4.02.03	Syllabus of B. Tech. (Civil Engg.), 5 th - 8 th Sem. Batch 2K19 onwards
ITEM 4.02.04	Syllabus of B. Tech. (Electronics & Communication Engg.), 7 th - 8 th Sem. for Batch 2K18 onwards
ITEM 4.02.05	Scheme & Syllabus of B. Tech. (Mechanical Engg.), 7 th - 8 th Sem. for Batch 2K18 onwards
DECISION	Proposed Schemes and Syllabi were approved. Though, in some cases Course Outcomes/Objectives shall be fine tuned in line with Bloom's Taxonomy's upper pyramid. These shall be finalised by respective BoS Chairpersons, in consultation with Member-secretary Faculty of Engg. (FoE), Dean Academic Affairs and in e-consultation with respective Faculty of Engg. experts and Dean Faculty of Engg. on or before 15.9.2021.
ITEM 4.03	TO IMPLEMENT THE DECISION OF 4 TH MEETING OF ACADEMIC COUNCIL REGARDING INCORPORATION OF THE SUBJECT "UNIVERSAL HUMAN VALUES 2: UNDERSTANDING HARMONY" AS A MANDATORY CREDIT COURSE FOR ALL UNDERGRADUATE (B.TECH) STUDENTS FROM ACADEMIC YEAR 2020-21.
DECISION	<ol style="list-style-type: none"> 1. The said subject "Universal Human Values 2 - Understanding Harmony (BHSMC0-026)" (with 3-credits) is approved to be taught in 3rd/4th semester for batches 2021 onwards replacing the earlier taught (in 1st/2nd sem) non-credit course titled "Human Values and Professional Ethics (BHUMA0-103)". 2. Also the subject "Universal Human Values 1" is approved to be taught during the 21-days' Student Induction Program for batches 2021 onwards.

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ITEM 4.04 (Table Item)	IMPLEMENTATION OF NEP-2020 GUIDELINES AT MRSPTU, BATHINDA
DECISION	<p>To implement NEP-2020 guidelines including multiple entry-exit scheme with awarding of Certificate/Diploma to dropout students; Dean Academic Affairs, MRSPTU sought the views of honorable members including those from other institutions (NIT/NITTTR/PEC/TIET/DCRUST) about the mechanism adopted at their institutions. After deliberations, it was observed that:</p> <ol style="list-style-type: none"> 1. By starting Major-Minor degree programs, MRSPTU has already incorporated flexibility/multidisciplinary approach in its curriculum, which at some places is being done now under NEP. 2. With ongoing curriculum scheme, it is not possible to introduce Certificate/Diploma level multiple entry-exit, at this point of time. It was decided to watch developments taking place at other Institutions in this regard until next meeting for further necessary action.
General Discussion	<ol style="list-style-type: none"> 1. Chairpersons of Board of Studies of various disciplines should deliberate in their respective meetings, on the issues and procedural details for implementation of NEP – 2020. 2. Faculty should be made to attend the OBE (Outcome Based Education) related workshops for better framing of course outcomes/objectives.

The Meeting concluded with a vote of thanks to the Chair.

Bath
27/8/2021
Member Secretary
(Dr. Sarbjeet Kaur Bath)

For Approval please

Maninder Singh
CHAIRPERSON

Digitally signed by Maninder Singh
DN: cn=Maninder Singh, o=Thapar Institute of Engineering and Technology,
ou=Computer Science and Engineering, email=maningsh@thapar.edu, c=IN
Date: 2021.09.02 12:33:35 +05'30'

*Forwarded to Dean Academic Affairs
MRSPTU Bathinda for further
necessary action
please*

Bath
02/9/2021

*for records + file
Asst. Deans
2/9/21*

cc: Maninder KC for information pl.

Diary No. 4234.
Date 3/9/2021
Dean Academic Affairs,
MRSSTU, Bathinda



Department of Physics

hodphysics@mrsptu.ac.in (Ph. 87250-72488)

Ref No : Phy/21/ 2643

Dated 08/9/21

5th Academic Cont

BOS Physics

Minutes of Meeting

The 4th meeting of Faculty of Sciences (FOS) of MRSPTU was held on 02-09-2021 (Thursday) at 11:00 am (via online mode through Google Meet). The following were present:-

1. DR O.P. Pandey, Sr. Prof. & Head, School of Physics and Material Science, Thapar IET, Patiala
2. Prof. (Dr.) Sandeep Kansal, Professor, Deptt. of Physics, MRSPTU, Bathinda (Member) *20/*
~~(for Member Secretary FOS)~~
3. Dr. Karanvir Singh, Head, Department of Mathematics, MRSPTU, Bathinda
4. Dr. Seema Sharma, Head, Department of Chemistry, MRSPTU, Bathinda
5. Prof. Sanjay Bhatnagar, Head, Deptt of Computational Sciences, MRSPTU, Bathinda
6. Dr. Kawaljit Singh Sandhu, Head, Deptt of Food Science & Technology, MRSPTU, Bathinda
7. Dr Manish Gupta, Deptt of Mathematics, Baba Farid CET, Bathinda
8. Prof Mamta Kansal, Assistant Professor, Deptt of Mathematics, MRSPTU, Bathinda
9. Dr Munish Kumar, Assistant Professor, Deptt of Computational Sci., MRSPTU, Bathinda
10. Dr Veena Sharma, Assistant Professor, Deptt. of Physics, MRSPTU, Bathinda
11. Dr Devinder Mehta, Professor, Department of Physics, Punjab University, Chandigarh
12. Dr. Kawaljeet Singh, Professor & Director Univ Computer Centre, Punjabi University, Patiala
13. Dr Vikas Nanda, Professor, Deptt of Food Engg & Tech, Sant Longowal Inst of Engg & Tech. Sangrur

The following could not attend the meeting.

1. Prof. (Dr.) J. S. Hundal, (Member Secretary FOS)
Prof. & Head, Deptt. of Physics, MRSPTU, BTI (on leave)
2. Dr Yogeshwar Chauhan, Deptt of Physics, Asra College of Engg
3. Dr Pritpal Singh Dhillon, Professor, Deptt. of Chemistry, Sri Guru Granth Sahib World Uni., F'Sahib
4. Dr. Satya Bir Singh, Professor, Deptt of Mathematics, Punjabi University, Patiala
5. Dr. Poonam Aggarwal Thakur, Principal, Northern India Institute of Fashion & Technology, Mohali

Discussion and Decisions: The discussions and decisions are attached in the enclosed Annexure.

The meeting ended with thanks to the chairperson Faculty of Sciences.

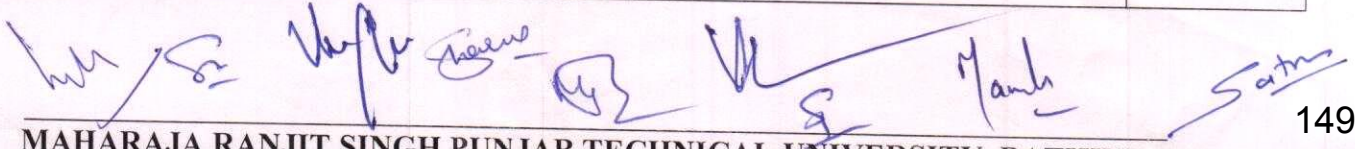
O.P. Pandey
 (Dr. O.P. Pandey)
 Chairperson
 Faculty of Sciences
 MRSPTU, Bathinda
Satya

Diary No.4263...
 Date16/9/2021...
 Dean Academic Affairs,
 MRSSTU, Bathinda

- Put up in AC for satisfaction
 - syllabi as approved be uploaded.
 - copy be sent to HODs ve/Registration
 15/9/21
 cc: HODs ve

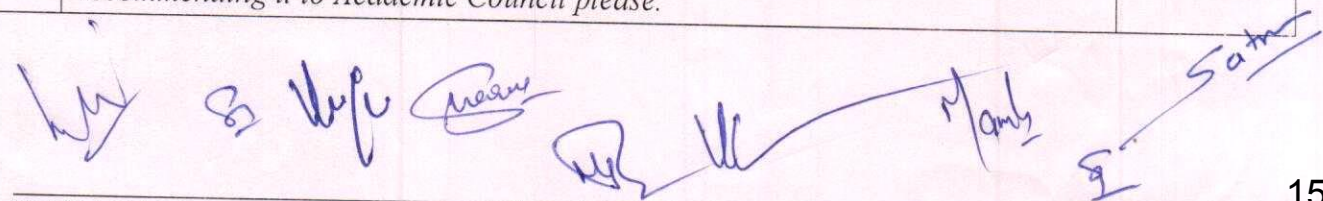
4th MEETING OF FACULTY OF SCIENCES OF MRSPTU BATHINDA

<p>ITEM NO. 04.01</p>	<p>TO APPROVE THE MINUTES OF MEETING OF BOARD OF STUDIES IN COMPUTATIONAL SCIENCES HELD ON 09.04.2021 & 29.04.2021</p> <p>The minutes of meeting of Board of Studies in Computational Sciences held on 09.04.2021 & 29.04.2021 are attached herewith ANNEXURE-I (Page 1-7).</p> <p><i>Put up before Faculty of Sciences for deliberations and approval for further recommending it to Academic Council please.</i></p>	<p>Approved</p>
<p>ITEM NO. 04.02</p>	<p>TO APPROVE THE MINUTES OF MEETING OF BOARD OF STUDIES IN FOOD SCIENCE & TECHNOLOGY HELD ON 06.05.2021</p> <p>The minutes of meeting of Board of Studies in Food Science & Technology held on 06.05.2021 are attached herewith ANNEXURE-II (Page 8).</p> <p><i>Put up before Faculty of Sciences for deliberations and approval for further recommending it to Academic Council please.</i></p>	<p>Approved</p>
<p>ITEM NO. 04.03</p>	<p>TO APPROVE THE SYLLABUS OF INTEGRATED / DUAL DEGREE BCA-MCA FOR 2018 AND 2019 BATCH FROM 7TH TO 10TH SEMESTER</p> <p>As per the comments received from Chairperson, BOS in Computational Sciences, the syllabi of Integrated / Dual Degree BCA-MCA for 2018 & 2019 batch are same from Semester 7th to 10th ANNEXURE-III (Page 9).</p> <p><i>Put up before Faculty of Sciences for deliberations and approval for further recommending it to Academic Council please.</i></p>	<p>Approved</p>
<p>ITEM NO. 04.04</p>	<p>TO APPROVE THE COURSE OBJECTIVES & EXPECTED OUTCOMES OF INTEGRATED / DUAL DEGREE BCA-MCA FOR 2019 BATCH ONWARDS FROM 1ST TO 6TH SEMESTER</p> <p>The course objectives & expected outcomes of Integrated/ Dual Degree BCA-MCA for 2019 batch onwards from 1st to 6th semester, received from concerned Board of Studies ANNEXURE-IV (Page 10-23).</p> <p><i>Put up before Faculty of Sciences for deliberations and approval for further recommending it to Academic Council please.</i></p>	<p>Approved</p>
<p>ITEM NO. 04.05</p>	<p>TO APPROVE THE GUIDELINES FOR DISSERTATION WORK IN M.SC FASHION TECHNOLOGY</p> <p>As per the comments received from Chairperson, BOS Fashion Technology, the guidelines issued for master thesis in Physics can be referred ANNEXURE-V (Page 24-25).</p> <p><i>Put up before Faculty of Sciences for deliberations and approval for further recommending it to Academic Council please.</i></p>	<p>Approved</p>



4th MEETING OF FACULTY OF SCIENCES OF MRSPTU BATHINDA

ITEM NO. 04.06	APPROVAL OF SYLLABI OF UG/PG PROGRAMMES IN SCIENCES	<p align="center">Approved</p>	
Syllabi of following UG/PG Programmes have been prepared by the concerned Board of Studies as per following details: ANNEXURE-VI (Page 26-167)			
S. No.	ITEM		Pages
1.	Scheme and Syllabus of B. Sc. (Food Science & Technology)/ B.F.S.T. (Hons.) 5 th – 6 th Sem. 2019 Batch onwards		26-49
2.	Scheme and Syllabus of B. Sc. (Food Science & Technology)/ B.F.S.T. (Hons.) 1 st – 2 nd Sem. 2021 Batch onwards		50-66
3.	Scheme and Syllabus of M. Sc. (Food Science & Technology) 2021 Batch onwards		67-103
4.	Syllabus of B. Sc. (Hons.) Mathematics 5 th – 6 th Sem. 2019 Batch onwards		104-113
5.	Integrated/ Dual Degree BCA-MCA 7 th – 10 th Sem. 2018 & 2019 Batch onwards		114-136
6.	Scheme and Syllabus of B. Sc. (Graphics & Web Designing) 1 st – 4 th Sem. 2021 Batch onwards	137-167	
7.	Syllabus of B.Sc. (Hons.) Physics 5 th and 6 th Semester.		
Put up before Faculty of Sciences for deliberations and approval for further recommending it to Academic Council please.			
ITEM NO. 04.07	TO APPROVE THE MINUTES OF MEETING OF BOARD OF STUDIES IN PHYSICS HELD ON 01.09.2021	<p align="center">Approved</p>	
The minutes of meeting of Board of Studies in Physics held on 01.09.2021 are attached herewith ANNEXURE-VII . Put up before Faculty of Sciences for deliberations and approval for further recommending it to Academic Council please.			
ITEM NO. 04.08	TO APPROVE THE PROGRAM OBJECTIVES AND COURSE OBJECTIVES OF BSC (HONS.) PHYSICS AND MSC PHYSICS COURSES.	<p align="center">Approved</p>	
The Program Objectives and Course Objectives of BSc (Hons.) Physics and MSc hons Physics courses for all semesters, received from concerned Board of Studies ANNEXURE-VII . Put up before Faculty of Sciences for deliberations and approval for further recommending it to Academic Council please.			



MINUTES OF MEETING

A prescheduled 3rd Meeting of **FACULTY OF COMMERCE & MANAGEMENT** was held online at 11:00 am on 04.09.2021.

The following members were present online:

- | | |
|--|--------------------|
| 1. Dr. Gurbinder Singh(Dean Faculty of Commerce & Management) | (In the Chair) |
| 2. Professor Sudhir Jain (Ex-Professor & Head Mgt; IIT Delhi) | (Member) |
| 3. Professor Sanjeev Kumar Sharma (Professor-Mgt. PU Chandigarh) | (Member) |
| 4. Dr. Damanpreet Kaur | (Member) |
| 5. Dr. Veerpaul Kaur Maan | (Member) |
| 6. Dr. Suman Kathuria | (Member) |
| 7. Dr Pritpal Singh Bhullar, In-charge UBS, MRSPTU Bathinda | (Member Secretary) |

At the start of meeting, Member Secretary welcomed the Chairman and the Learned Members to the 3rd Faculty meeting of Faculty of Commerce and Management of MRSPTU Bathinda. With the permission of the Chair, the pre-circulated agenda points were taken up. After detailed deliberations, the following decisions were unanimously arrived at:

ITEM	ITEM DESCRIPTION	DECISIONS
03.01	Approval of online courses	The following online courses have been approved 1. Personality Development, 2. Stock Market Trading for Business The load of online courses will be extra other than the regular teaching load and extra remuneration will be aid to faculty.
03.02	Approval of Syllabi of UG Programmes for Batch 2021-22 Onwards.	i. The syllabus of B.Com-M.Com Integrated/Dual Degree (1 st and 2 nd semester) was approved for 2021 batch. ii. The syllabus of BBA-MBA Integrated/Dual Degree (3 rd and 4 th semester) and BBA Aviation (3 rd and 4 th semester) was approved for 2021 batch.
03.03	Approval of Syllabi of PG Programmes for Batch 2021-22 Onwards.	The syllabus of MBA (3 rd and 4 th semester) was approved for 2020.
03.04	Approval of PO-CO, PEO and PSO	PO-CO, PEO and PSO of MBA batch(2020,2019,2018), B.Com-M.Com Integrated/Dual Degree (2021 batch), BBA-MBA Integrated/Dual Degree (2020 batch) has been Approved

The Faculty of commerce and Management suggested to use word 'Course' instead of word 'Subject' in study scheme and syllabus.

It was decided that the above decisions be recommended to the Academic Council of MRSPTU Bathinda for approval. Members also authorized Dean (Academic Affairs), MRSPTU Bathinda to make minor modification in schemes; if required to bring uniformity viz-i-viz other faculties.

The meeting concluded with Vote of Thanks to the Chair

Bhullar
06/9/21
(Member Secretary)

Chairman cum Dean (Faculty of Commerce & Management)

DAA

Bhullar
06/9/21



MAHARAJA RANJIT SINGH PUNJAB TECHNICAL UNIVERSITY
DEPARTMENT OF PHARMACEUTICAL SCIENCES & TECHNOLOGY

Dabwali/Badal Road, Bathinda -151001
 (Established by Govt. of Punjab vide Punjab Act No. 5 of 2015)



BOARD OF STUDES - PHARMACY
MINUTES OF MEETING (ONLINE)

The last BoS meeting held on 20.08.2020 through online mode (google meet) was confirmed and approved and final minutes for both the meetings are prepared as detailed below:

The syllabus and schemes as per the following details was approved in the last BoS meeting held on 20.08.2020 through online mode and the details were submitted to DAA office MRSPTU/ PHARM/767 dated: 12.10.2020

Sr. No.	Course Name	Scheme	Syllabus
1	B.Sc. Operation Theater Technology	Complete Course	1 and 2 nd sem
2	B.Sc. Radio Medical Imaging Technology	Complete Course	1 and 2 nd sem
3	B.Sc. Medical Microbiology	Complete Course	1 and 2 nd sem
4	B. Sc. Optometry	Complete Course	1 and 2 nd sem

With reference to email notification dated 07.06.2021, an online meeting was held through google meet with a code <https://meet.google.com/yjg-ryjo-cfz>, dated 09.06.2021. Following members were present in the meeting:

Sr. No.	Name	Member
1	Dr. Rahul Deshmukh	Chairman
2	Dr. Ashish Baldi	Member
3	Dr. Uttam Kumar Mandal	Member
4	Dr. Amit Bhatia	Member
5	Dr. Subheet Jain	Member
6	Dr. Baljinder Singh Bajwa	Member
7	Dr. Harmel Singh	Member
8	Dr. HC Patil	Member
9	Dr. Imtiyaz Wani	Opted Member from Pramedical Sciences

Chairman BoS welcomed all the member of BoS, by appreciating their contributions and timely support in examining and suggesting required changes in the schemes and the syllabus of various courses.

Schemes and syllabi for the following were presented before the committee:

Sr. No.	Course Name	Scheme	Syllabus
1	B.Sc. Operation Theater Technology	Complete Course	Complete Course
2	B.Sc. Radio Medical Imaging Technology	Complete Course	Complete Course
3	B.Sc. Medical Microbiology	Complete Course	Complete Course
4	B. Sc. Optometry	Complete Course	Complete Course
5	B.Sc. Cardiac Care Technology	Complete Course	1 and 2 nd sem
6	B.Sc. Dialysis Technology	Complete Course	1 and 2 nd sem
7	B.Sc. (Hons.) Forensic Science	Complete Course	1 and 2 nd sem
8	B.Sc. Respiratory Care Technology	Complete Course	1 and 2 nd sem
9	B.Sc. Anesthesia Technology	Complete Course	1 and 2 nd sem
10	B. Voc. Medical Imaging Technology	Complete Course	Complete Course
11	M.Sc. Radio Medical Imaging Technology	Complete Course	Complete Course
12	M. Sc. Microbiology	Complete Course	1 and 2 nd sem

13	M.Sc. Medical Laboratory Science (Clinical Microbiology)	Complete Course	Complete Course
14	M.Sc. Anesthesia & Operation Theater Technology	Complete Course	Complete Course
15	B. Pharm. (Practice)	Complete Course	Complete Course
16	Pharm. D.	Complete Course	Complete Course

Following suggestion well taken and unanimously approved by all members:

1. Scheme and credit of similar courses to be kept uniform, as far as possible.

All the above mentioned schemes and syllabi of the courses were approved.

The approval of the members was taken through email, which is attached as Annexure-1

The schemes and the syllabi were rectified as per the suggestions of the members.

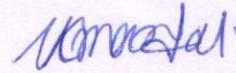
The meeting was ended with vote of thanks to the chair.



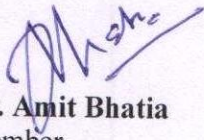
Chairman
BoS – Pharmacy



Prof. Ashish Baldi
Member



Dr. Uttam K. Mandal
Member



Dr. Amit Bhatia
Member

(Consent attach)
Dr. Subheet Jain
Member

(Consent attach)
Dr. Baljinder Singh Bajwa
Member


(Consent attach)
Dr. Harmel Singh
Member

(Consent attach)
Dr. HC Patil
Member

(Consent attach)
Dr. Imtiyaz Wani
Member

Q. No. 4264.
Date 16/9/21
Dean Academic Affairs,
MRSSTU, Bathinda

- Put up in AC for ratification
- syllabi approved be uploaded
- copy be sent to Hon'ble VC, Registrar cum Member
- sec. Academic council


15/9/21

Asst. Dean I / CDE02

cc: VC for information, counsel

FACULTY OF PHARMACY - MINUTES OF MEETING (ONLINE)

With reference to email notification dated 18.06.2021, an online meeting was held through google meet with a link: <https://meet.google.com/myf-dmzk-kfv>, dated 21.06.2021 (10:00 AM).

Following members were present in the meeting:

Sr. No.	Name	Member
1	Prof. (Dr.) Inder Pal Singh	Chairperson
2	Dr. Rahul Deshmukh	Member/Convener
3	Dr. Ashish Baldi	Member
4	Dr. Amit Bhatia	Member
5	Dr. Baljinder Singh Bajwa	Member
6	Dr. Anu Goyal	Member
7	Dr. Veera Garg	Member

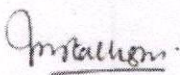
Chairman, FoP welcomed all the member and appreciated their timely presence for the meeting. The schemes and the syllabi of different courses were placed and approved during a meeting of Board of Studies - Pharmacy (meeting held on 09.06.2021). These following schemes and syllabi were presented before the FoP committee:


Sr. No.	Course Name	Scheme	Syllabus
1	B.Sc. Operation Theater Technology	Complete Course	Complete Course
2	B.Sc. Radio Medical Imaging Technology	Complete Course	Complete Course
3	B.Sc. Medical Microbiology	Complete Course	Complete Course
4	B. Sc. Optometry	Complete Course	Complete Course
5	B.Sc. Cardiac Care Technology	Complete Course	1 and 2 nd sem
6	B.Sc. Dialysis Technology	Complete Course	1 and 2 nd sem
7	B.Sc. (Hons.) Forensic Science	Complete Course	1 and 2 nd sem
8	B.Sc. Respiratory Care Technology	Complete Course	1 and 2 nd sem
9	B.Sc. Anesthesia Technology	Complete Course	1 and 2 nd sem
10	B. Voc. Medical Imaging Technology	Complete Course	Complete Course
11	M.Sc. Radio Medical Imaging Technology	Complete Course	Complete Course
12	M.Sc. Medical Laboratory Science (Clinical Microbiology)	Complete Course	Complete Course
13	M.Sc. Anesthesia & Operation Theater Technology	Complete Course	Complete Course
14	M. Sc. Microbiology	Complete Course	1 and 2 nd sem
15	B. Pharm. (Practice)	Complete Course	Complete Course
16	Pharm. D.	Complete Course	Complete Course


All the above mentioned schemes and syllabi of the courses were approved.

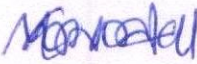
The approval of the members was taken through email, which is attached as Annexure-1


The meeting was ended with the vote of thanks to the chair.


Chairman
 Faculty of Pharmacy (FoP)


Dr. Rahul Deshmukh
 Member/Convener


Prof. Ashish Baldi
 Member


Dr. Uttam K. Mandal
 Member


Dr. Amit Bhatia
 Member

(Consent attach)
Dr. Baljinder Singh Bajwa
 Member

(Consent attach)
Dr. Anu Goyal
 Member

(Consent attach)
Dr. Veera Garg
 Member

**Approval of Courses under consideration in the meeting of Faculty of Pharmacy, MRSPTU, Bathinda**

Baljinder Singh Bajwa <bajwabaljinder1@gmail.com>
To: HOD Pharmacy <hodpharmacy@mrsptu.ac.in>
Cc: Rahul Deshmukh <drrahul09@gmail.com>, drrahul@mrsptu.ac.in

Mon, Jun 21, 2021 at 2:45 PM

No.	Course Name
1	B.Sc. Operation Theater Technology
2	B.Sc. Radio Medical Imaging Technology
3	B.Sc. Medical Microbiology
4	B. Sc. Optometry
5	B.Sc. Cardiac Care Technology
6	B.Sc. Dialysis Technology
7	B.Sc. (Hons.) Forensic Science
8	B. Voc. Medical Image Technology
9	B.Sc. Respiratory Care Technology
10	B.Sc. Anesthesia Technology
11	B. Pharm. (Practice)
12	Pharm. D.
13	M.Sc. Radio Medical Imaging Technology
14	M. Sc. Microbiology
15	M.Sc. Medical Lab Science (Clinical Microbiology)
16	M.Sc. Anesthesia & Operation Theater Technology

Respected sir,

Please accept my consent of approval of all above mentioned courses discussed in the meeting of Faculty of Pharmacy, MRSPTU Bathinda on 21/06/2021. The syllabi and schemes are fully approved from my side.

Thanks and regards

Dr. Baljinder Singh Bajwa

Professor/Principal

LLRCP Moga (167).

bajwabaljinder1@gmail.com

bajwabaljinder@yahoo.co.in

F. Mah
Head
Department of Pharmaceutical Science & Technology
Maharaja Ranjit Singh Punjab Technical University
Bathinda (Pb.)

Approval of courses under consideration in the meeting of Faculty of Pharmacy, MRSPTU, Bathinda

Veera Garg <veeragarg@yahoo.in>
To: HOD Pharmacy <hodpharmacy@mrsptu.ac.in>

Wed, Jul 7, 2021 at 9:34 AM

Respected sir,

Please accept my consent of approval of all above mentioned courses discussed in the meeting of Faculty of Pharmacy, MRSPTU Bathinda on 21/06/2021. The syllabi and schemes are fully approved from my side.

Sr. No.	Course Name
1	B.Sc. Operation Theater Technology
2	B.Sc. Radio Medical Imaging Technology
3	B.Sc. Medical Microbiology
4	B. Sc. Optometry
5	B.Sc. Cardiac Care Technology
6	B.Sc. Dialysis Technology
7	B.Sc. (Hons.) Forensic Science
8	B. Voc. Medical Image Technology
9	B.Sc. Respiratory Care Technology
10	B.Sc. Anesthesia Technology
11	B. Pharm. (Practice)
12	Pharm. D.
13	M.Sc. Radio Medical Imaging Technology
14	M. Sc. Microbiology
15	M.Sc. Medical Lab Science (Clinical Microbiology)
16	M.Sc. Anesthesia & Operation Theater Technology

Thanks and regards

Mrs. Veera Garg

Associate Professor

S.D.College of Pharmacy

Barnala-148101

Head
Department of Pharmaceutical Science & Technology
Maharaja Ranjit Singh Punjab Technical University
Bathinda (Pb.)

**Approval of course under consideration in meeting of Faculty of Pharmacy,
MRSPTU, Bathinda**

anugoyal98@yahoo.co.in <anugoyal98@yahoo.co.in>
To: HOD Pharmacy <hodpharmacy@mrsptu.ac.in>

Wed, Jul 7, 2021 at 9:40 AM

Respected Sir,

Please accept my consent for approval of all below mentioned courses discussed in meeting of Faculty of Pharmacy, MRSPTU Bathinda on 21.06.2021. The syllabi and schemes are fully approved from my side.

Sr. No.	Course Name
1	B.Sc. Operation Theater Technology
2	B.Sc. Radio Medical Imaging Technology
3	B.Sc. Medical Microbiology
4	B. Sc. Optometry
5	B.Sc. Cardiac Care Technology
6	B.Sc. Dialysis Technology
7	B.Sc. (Hons.) Forensic Science
8	B. Voc. Medical Image Technology
9	B.Sc. Respiratory Care Technology
10	B.Sc. Anesthesia Technology
11	B. Pharm. (Practice)
12	Pharm. D.
13	M.Sc. Radio Medical Imaging Technology
14	M. Sc. Microbiology
15	M.Sc. Medical Lab Science (Clinical Microbiology)
16	M.Sc. Anesthesia & Operation Theater Technology

Thanks and Regards

Anu Goyal

Associate professor

S.D. College of pharmacy Barnala

M.No. 8146493900

Head

Department of Pharmaceutical Science & Technology
Maharaja Ranjit Singh Punjab Technical University
Bathinda

ਮਹਾਰਾਜਾ ਰਣਜੀਤ ਸਿੰਘ ਪੰਜਾਬ ਟੈਕਨੀਕਲ ਯੂਨੀਵਰਸਿਟੀ ਬਠਿੰਡਾ।

SUB: PROPOSED BOS IN FASHION TECHNOLOGY (FOR 2 YEARS PERIOD FROM THE DATE OF NOTIFICATION).

NOTIFICATION

BOARD OF STUDIES IN FASHION TECHNOLOGY (PROPOSED)

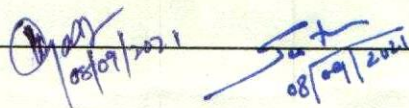
Whereas, Maharaja Ranjit Singh Punjab Technical University has been established u/s 2(f) of the UGC Act, 1956; vide Punjab Act 5(2015) notified through Punjab Government Gazette Extraordinary (Regd. No CHD/0092/2015-2017) Notification No. 5-Leg./2015 dated 12th February 2015.

Further Whereas, the structure of Board of Studies for various courses running in the University was approved by the Board of Governors of MRSPTU vide item 2.19 in its 2nd meeting held on 7.9.2015.

Whereas, with the approval of the competent authority, the BoS in Fashion Technology is notified as under:

SNo	NOMENCLATURE	NAME & ADDRESS	DESIGNATION
(i)	Head of the University Department concerned	Vacant This shall be included as and when available. (at present no faculty is available).	CHAIRPERSON (Ex-officio)
(ii)	One Faculty member from University Department concerned (of each specialization)	Vacant This shall be included as and when available. (at present no faculty is available).	Member
(iii)	One Expert (in the subject from outside the Univ.)	1. Dr Poonam Aggarwal* Principal NIIFT Mohali & Ludhiana (94173-03649) principal@niiftindia.com thakur10poonam@yahoo.co.in	Member
(iv)	Two Experts (nominated by the Vice Chancellor) (Proposed)	1. Dr Simrita Singh , Principal NIIFT Jalandhar (62397-43234) singhsimrita@hotmail.com drsimrita@gmail.com 2. Dr Deepti Sharma , Northern India Institute of Fashion Tech, Mohali (90416-22326, 94175-42138) deeptiniift@yahoo.co.in ; deeptiniift@hotmail.com	Members
(v)	Two Faculty members (from affiliated/ constituent Colleges)	1. Mrs Rajinder Kaur , HOD Fashion Technology, Desh Bhagat Foundation Group of Inst, Moga (99882-55255) rajinderkaursangha@gmail.com 2. Mrs Harjinder Kaur , Desh Bhagat Foundation Group of Inst, Moga (88728-39629) harjinderkaurgill22@gmail.com	Members
(vi)	One representative (from industry/ corporate sector)	Mr Madan Lal Punjab Lalit Kala Akademy, Chandigarh (98149-04403) madan_artist@yahoo.com	Member
(vii)	One Post-Graduate meritorious alumnus	Vacant (Not available at present)	Member
(viii)	Any other (against vacancy of (ii) & (vii) above for 2 years or until further orders whichever is earlier)	1. Dr Shweta Sharma , Asstt. Professor NIIFT, Mohali (93161-17360) arora_shweta@rediffmail.com 2. Prof Harpreet Singh , Asstt. Professor NIIFT, Ludhiana (98778-47263) harpreetsinghbatialdh@gmail.com	Member

*** The member shall act as a Chairperson BoS (Ex-officio) until further orders.**



ਮਹਾਰਾਜਾ ਰਣਜੀਤ ਸਿੰਘ ਪੰਜਾਬ ਟੈਕਨੀਕਲ ਯੂਨੀਵਰਸਿਟੀ ਬਠਿੰਡਾ।

For Programmes:

1	B.Sc. Fashion Technology
2	B.Sc. Fashion Design
3	M.Sc. Fashion Technology

In addition: Any other Fashion Technology/Fashion Design related program as referred by Academic Council or University authorities.

MAIN FUNCTIONS:

- To prepare syllabi for various Programmes in line with the Vision, Mission and Objectives of the university/ department, interest of all stakeholders, including employers and national requirements, for consideration and approval of the Academic Council
- To suggest methods and methodologies for innovative teaching and evaluation techniques
- To coordinate research, teaching and extension/ outreach activities in the university/ department
- To suggest to Academic Council, an expert panel of faculty members for Q-Paper setters; Evaluators and for examining the lab courses
- Any other assignment, as referred to, by the MRSPTU Academic Council
- BoS shall work under the jurisdiction of Faculty of Sciences of MRSPTU. Recommendations of BoS shall be forwarded to Dean Academic Affairs through Faculty of Sciences.

QUORUM:

Quorum of the BoS meeting shall be minimum of half of the members of the BoS constituted including the Chairperson of the BoS.

The term of members expires after two years from the date of notification or till they hold official positions as above, whichever is earlier.

Submitted for your kind perusal and approval please.

[Signature]
08/09/2021
Clerk Cum DEO
(Prepared by)

S. Arora
08/09/2021

Assistant Dean (Academics)

for approval including 'A' pt
[Signature]
21/9/21

DEAN ACADEMIC AFFAIRS

kindly suggest at least five
names to the list.
[Signature]
21/9/21

**HON'BLE VICE-CHANCELLOR CUM
CHAIRMAN ACADEMIC COUNCIL MRSPTU**

Following name alongwith those at s.no. (viii) 'B'
may be considered pt.

1. Dr. Meeta Gauri, Asstt Prof, NII FT, Mohali

S.No. 1 & 2 in at s.no. (iv) approved 21/9/21
in place the list for better recommendations
may be prepared with more names.
[Signature]
23/9/21

[Signature]

DAA

for records & file
[Signature]
28/9/21
Asstt Dean/CSEO

Diary No. 4246
Date 19/09/2021
Dean Academic Affairs,
MRSSTU, Bathinda

Diary No. VCI. 431
Date 23/09/2021
Bathinda

Diary No. 4288
Date 22/9/21
Dean Academic Affairs,
MRSSTU, Bathinda

Maharaja Ranjit Singh Punjab Technical University
DIARY No. VCI. 431
DATE 23/09/2021
Bathinda (Pb.)



ਮਹਾਰਾਜਾ ਰਣਜੀਤ ਸਿੰਘ ਪੰਜਾਬ ਤਕਨੀਕੀ ਯੂਨੀਵਰਸਿਟੀ, ਬਠਿੰਡਾ
ਡੱਬਵਾਲੀ ਰੋਡ, ਬਠਿੰਡਾ - 151001
Maharaja Ranjit Singh Punjab Technical University
DABWALI ROAD, BATHINDA-151001

[A State University Estb. by Govt. of Punjab Act No. 5(2015) u/s 2(f) & Approved u/s 12B of UGC Act, 1956]

ਡੀਨ (ਅਕਾਦਮਿਕ ਮਾਮਲੇ)

DEAN (Academic Affairs)

Ref. No. DAA/MRSPTU/Notifications/ 118

Date: 24.09.2021

NOTIFICATION

BOARD OF STUDIES IN FASHION TECHNOLOGY

(TENURE 01.10.2021 TO 30.09.2023)

Whereas, Maharaja Ranjit Singh Punjab Technical University has been established u/s 2(f) of the UGC Act, 1956; vide Punjab Act 5(2015) notified through Punjab Government Gazette Extraordinary (Regd. No CHD/0092/2015-2017) Notification No. 5-Leg./2015 dated 12th February 2015.

Further Whereas, the structure of Board of Studies for various courses running in the University was approved by the Board of Governors of MRSPTU vide item 2.19 in its 2nd meeting held on 7.9.2015.

Whereas, with the approval of the competent authority, as received vide No VC/431 dt 23.9.2021, the BoS in **FASHION TECHNOLOGY** is notified as under:

SN	NOMENCLATURE	NAME & ADDRESS	DESIGNATION
(i)	Head of the University Department concerned	Vacant This shall be included as and when available. (at present no faculty is available).	CHAIRPERSON (Ex-officio)
(ii)	One Faculty member from University Department concerned (of each specialization)	Vacant This shall be included as and when available. (at present no faculty is available).	Member
(iii)	One Expert (in the subject from outside the Univ.)	1. Dr Poonam Aggarwal* Principal Northern India Institute of Fashion Tech Mohali & Ludhiana (94173-03649)principal@niiftindia.com thakur10poonam@yahoo.co.in	Member
(iv)	Two Experts (nominated by the Vice Chancellor)	1. Dr Simrita Singh Principal NIIFT Jalandhar (62397-43234) singhsimrita@hotmail.com; drsimrita@gmail.com 2. Dr Deepti Sharma Northern India Institute of Fashion Tech, Mohali(90416-22326, 94175-42138) deeptiniift@yahoo.co.in; deeptiniift@hotmail.com	Member
(v)	Two Faculty members (from affiliated/ constituent Colleges)	1. Ms Rajinder Kaur HOD, Fashion Technology, Desh Bhagat Foundation Group of Inst, Moga(99882-55255) rajinderkaursangha@gmail.com 2. Ms Harjinder Kaur Desh Bhagat Foundation Group of Inst, Moga (88728-39629) harjinderkaurgill22@gmail.com	Member

(vi)	One representative (from industry/ corporate sector)	Mr Madan Lal Punjab Lalit Kala Akademi, Chandigarh (98149-04403)madan_artist@yahoo.com	Member
(vii)	One Post-Graduate meritorious alumnus	Vacant (Not available at present)	Member
(viii)	Any other (against vacancy of (ii) & (vii) above for 2 years or until further orders whichever is earlier)	1. Dr Shweta Sharma , Asstt. Professor NIIFT, Mohali (93161-17360)arora_shweta@rediffmail.com 2. Prof Harpreet Singh , Asstt. Professor NIIFT, Ludhiana (98778-47263) harpreetsinghbhatialdh@gmail.com	Member

*** The Hon'ble Member shall act as a Chairperson BoS (Ex-officio) until further orders.**

For Programmes:

1	B.Sc. Fashion Technology
2	B.Sc. Fashion Design
3	M.Sc. Fashion Technology
<u>In addition:</u> Any other Fashion Technology/Fashion Design related program or matter as referred to, by the Academic Council or University authorities.	

MAIN FUNCTIONS:

- To prepare syllabi for various programmes in line with the Vision, Mission and Objectives of the university/ department, interest of all stakeholders, including employers and national requirements, for consideration and approval of the Academic Council.
- To suggest methods and methodologies for innovative teaching and evaluation techniques.
- To coordinate research, teaching and extension/outreach activities in the university/ department
- To suggest to Academic Council, an expert panel of faculty members for Q-Paper setters; Evaluators and for examining the lab courses
- Any other assignment, as referred to, by the MRSPTU Academic Council
- BoS shall work under the jurisdiction of 'Faculty of Sciences' and hence recommendations of BoS shall go to Faculty of Sciences. Thereafter, recommendation of FoS shall go to o/o Dean Academic Affairs MRSPTU Bathinda.

QUORUM:

Quorum of the BoS meeting shall be minimum of half of the members of the BoS constituted including the Chairperson of the BoS.

The term of members shall expire after two years or till they hold official positions as above, or until further orders, whichever is earlier.


DEAN ACADEMIC AFFAIRS
(Dr. Savina Bansal)

Endst. No.

Dated:

Forwarded to the following for information and further necessary action please:

- Hon'ble Vice Chancellor *cum* Chairman Academic Council MRSPTU, Bathinda
- Registrar *cum* Member Secretary BoG of MRSPTU Bathinda
- Dean Academics, MRSPTU Bathinda
- Dean Faculty of Sciences, MRSPTU
- All Concerned

ਮਹਾਰਾਜਾ ਰਣਜੀਤ ਸਿੰਘ ਪੰਜਾਬ ਟੈਕਨੀਕਲ ਯੂਨੀਵਰਸਿਟੀ ਬਠਿੰਡਾ।

Page 1/2

SUB: PROPOSED BOS IN AGRICULTURE SCIENCES (FOR 2 YEARS PERIOD FROM THE DATE OF NOTIFICATION).

BOARD OF STUDIES IN AGRICULTURE SCIENCES (Proposed)

SN _o	NOMENCLATURE	NAME & ADDRESS	DESIGNATION
(i)	Head of the University Department concerned	Dr. Kawaljit Singh Sandhu, Associate Professor, Deptt of Food Sci. & Tech., MRSPTU, Bathinda Email: kssandhu@mrsptu.ac.in (7015709403)	CHAIRPERSON (Ex-Officio)
(ii)	One Faculty member from University Department concerned (of each specialization)	Vacant (This program is going to start in MRSPTU from Sept., 2021 onwards. These shall be included as and when available. At present no faculty is available).	Member(s)
(iii)	One Expert (in the subject from outside the Univ.)	Dr. Jitender Singh Brar Retired Director, PAU, Krishi Vigyan Kendra, Bathinda. Email: jitender62brar@gmail.com (9417732932)	Member
(iv)	Two Experts (nominated by the Vice Chancellor) (Proposed)	1. Dr. Sandeep Singh Sandhu Principal Agronomist Climate Change & Agricultural Meteorology Punjab Agricultural University, Ludhiana Email: ssandhu@pau.edu (8146300110) 2. Dr. K.K. Gill Principal Agrometeorologist Communication Centre, PAU, Ludhiana Email: kkgill@pau.edu (9855385287)	Members
(v)	Two Faculty members (from affiliated/ constituent Colleges)	1. Dr. S. S. Bal Professor & Dean (Deptt. of Agriculture), Baba Farid College, Bathinda Email: drssbal@yahoo.co.in (9501115223) 2. Dr. K.S. Dadhich Professor & Director Academics & Research, Dolphin PG College, Chunni Kalan Email: ksd1947@gmail.com (8079054475)	Members
(vi)	One representative (from industry/ corporate sector)	Jagtar Singh Brar, Progressive Farmer VPO: Mehma Sarja, Bathinda Email: jagtarbrarbt@gmail.com Mob. 9417158928	Member
(vii)	One Post-Graduate meritorious alumnus	Vacant (Not available at present)	Member
(viii)	Any other against vacancy of (ii) & (vii) above (for 2 years or until further orders whichever is earlier)	1. Dr. Amarinder Singh Riar Assistant Professor Deptt of Agriculture, GNDU, Amritsar Email: amarinder.agri@gndu.ac.in M: 8146255300 2. Dr Gurupkar Singh Sidhu Fruit Biotechnologist, Room no. 204 School of Agricultural Biotechnology PAU, Ludhiana Email: gurupkar-soab@pau.edu M: 9781503780	

For Programmes:

1	B.Sc. (Hons.) Agriculture
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In addition: Any other Agriculture related program as referred by Academic Council

ਮਹਾਰਾਜਾ ਰਣਜੀਤ ਸਿੰਘ ਪੰਜਾਬ ਟੈਕਨੀਕਲ ਯੂਨੀਵਰਸਿਟੀ ਬਠਿੰਡਾ।

MAIN FUNCTIONS:

- a) To prepare syllabi for various Programmes in line with the Vision, Mission and Objectives of the university/ department, interest of all stakeholders, including employers and national requirements, for consideration and approval of the Academic Council
- b) To suggest methods and methodologies for innovative teaching and evaluation techniques
- c) To coordinate research, teaching and extension/ outreach activities in the university/ department
- d) To suggest to Academic Council, an expert panel of faculty members for Q-Paper setters; Evaluators and for examining the lab courses
- e) Any other assignment, as referred to, by the MRSPTU Academic Council

QUORUM:

Quorum of the BoS meeting shall be minimum of half of the members of the BoS constituted including the Chairperson of the BoS.

In case of Change of Head of Deptt during the tenure period of BoS, the new appointed Head of Deptt shall take over as Chairperson of BoS ex-officio. The term of members expires after two years from the date of notification or till they hold official positions as above, whichever is earlier.

Submitted for your kind perusal and approval please.

Diary Receipt No. ...4137...
Date ...12/8/2021...
Dean Academic Affairs,
MRSSTU, Bathinda

[Signature]
12/8/2021

Dr. Kawaljit Singh Sandhu
Head Deptt. of Food Sci.,
MRSPTU

Dean Academic Affairs

for approval. I agreed
[Signature]
12/8/21

~~VICE CHANCELLOR~~

[Signature]
12/8/21





ਮਹਾਰਾਜਾ ਰਣਜੀਤ ਸਿੰਘ ਪੰਜਾਬ ਤਕਨੀਕੀ ਯੂਨੀਵਰਸਿਟੀ, ਬਠਿੰਡਾ
ਡੱਬਵਾਲੀ ਰੋਡ, ਬਠਿੰਡਾ - 151001
Maharaja Ranjit Singh Punjab Technical University
DABWALI ROAD, BATHINDA-151001

[A State University Estb. by Govt. of Punjab Act No. 5(2015) u/s 2(f) & Approved u/s 12B of UGC Act, 1956]

ਡੀਨ (ਅਕਾਦਮਿਕ ਮਾਮਲੇ)

DEAN (Academic Affairs)

Ref. No.: DAA/MRSPTU/Notification/115

Date: 13.08.2021

NOTIFICATION

BOARD OF STUDIES IN AGRICULTURE SCIENCES

(Tenure: 13.08.2021 to 12.08.2023)

Whereas, Maharaja Ranjit Singh Punjab Technical University has been established u/s 2(f) of the UGC Act, 1956; vide Punjab Act 5(2015) notified through Punjab Government Gazette Extraordinary (Regd No CHD/0092/2015-2017) Notification No. 5-Leg./2015 dated 12th February 2015.

Further Whereas, the structure of Board of Studies for various courses running in the University was approved by the Board of Governors of MRSPTU vide item 2.19 in its 2nd meeting held on 7.9.2015.

Whereas, with approval of the competent authority vide no. VC/319 dt. 12.08.2021, BoS in Agriculture Sciences is notified as under:

SNo	NOMENCLATURE	NAME & ADDRESS	DESIGNATION
(i)	Head of the University Department concerned	Dr. Kawaljit Singh Sandhu, Associate Professor, Deptt of Food Sci & Tech, MRSPTU, Bathinda Email: kssandhu@mrsptu.ac.in (Mob. 7015709403)	CHAIRPERSON (Ex-Officio)
(ii)	One Faculty member from University Department concerned (of each specialization)	Vacant (This program is going to start in MRSPTU from Sept, 2021 onwards. These shall be included as and when available. At present no faculty is available).	Member(s)
(iii)	One Expert (in the subject from outside the Univ.)	Dr. Jitender Singh Brar Retired Director, PAU, Krishi Vigyan Kendra, Bathinda. Email: jitender62brar@gmail.com (Mob. 9417732932)	Member
(iv)	Two Experts (nominated by the Vice Chancellor)	1. Dr. Sandeep Singh Sandhu Principal Agronomist Climate Change & Agricultural Meterology Punjab Agricultural University, Ludhiana Email: ssandhu@pau.edu (Mob. 8146300110) 2. Dr. K.K. Gill Principal Agrometeorologist Communication Centre, PAU, Ludhiana Email: kkgill@pau.edu (Mob. 9855385287)	Members
(v)	Two Faculty members (from Affiliated/ Constituent colleges)	1. Dr. S. S. Bal Professor & Dean (Deptt. of Agriculture), Baba Farid College, Bathinda Email: drssbal@yahoo.co.in (Mob. 9501115223) 2. Dr. K.S. Dadhich Professor & Director Academics & Research, Dolphin PG College, Chunni Kalan Email: ksd1947@gmail.com (Mob. 8079054475)	Members

(vi)	One representative (from industry/ corporate sector)	Jagtar Singh Brar, Progressive Farmer VPO: Mehma Sarja, Bathinda Email: jagtarbrarbti@gmail.com (Mob. 9417158928)	Member
(vii)	One Post-Graduate meritorious alumnus	Vacant (Not available at present)	Member
(viii)	Any other against vacancy of (ii) & (vii) above (for 2 years or untill further orders whichever is earlier)	1. Dr. Amarinder Singh Riar Assistant Professor, Deptt of Agriculture, GNDU, Amritsar, Email: amarinder.agri@gndu.ac.in (Mob. 8146255300) 2. Dr. Gurupkar Singh Sidhu Fruit Biotechnologist, Room no. 204 School of Agricultural Biotechnology, PAU, Ludhiana, Email: gurupkar-soab@pau.edu (Mob. 9781503780)	

For Programmes:

1	B.Sc. (Hons.) Agriculture
In addition: Any other Agriculture related program as referred by Academic Council	

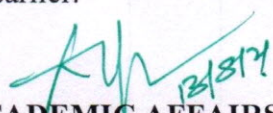
MAIN FUNCTIONS:

- To prepare syllabi for various Programmes in line with the Vision, Mission and Objectives of the university/ department, interest of all stakeholders, including employers and national requirements, for consideration and approval of the Academic Council
- To suggest methods and methodologies for innovative teaching and evaluation techniques
- To coordinate research, teaching and extension/ outreach activities in the university/ department
- To suggest to Academic Council, an expert panel of faculty members for Q-Paper setters; Evaluators and for examining the lab courses
- Any other assignment, as referred to, by the MRSPTU Academic Council

QUORUM:

Quorum of the BoS meeting shall be minimum of half of the members of the BoS constituted including the Chairperson of the BoS.

In case of Change of Head of Deptt during the tenure period of BoS, the new appointed Head of Deptt shall take over as Chairperson of BoS ex-officio. The term of members expires after two years from the date of notification or till they hold official positions as above, whichever is earlier.


DEAN ACADEMIC AFFAIRS
(Savina Bansal)

Endst. No. *DAA/MRSPTU/NOTIFICATION/115/1-4*

Dated: *13-08-2021*

Forwarded to the following for information and further necessary action please:

- Hon'ble Vice Chancellor *cum* Chairman Academic Council MRSPTU, Bathinda
- Registrar *cum* Member Secretary BoG of MRSPTU Bathinda
- Dean Academics, MRSPTU Bathinda
- All Concerned

ਮਹਾਰਾਜਾ ਰਣਜੀਤ ਸਿੰਘ ਪੰਜਾਬ ਟੈਕਨੀਕਲ ਯੂਨੀਵਰਸਿਟੀ ਬਠਿੰਡਾ।

Sub.: Academic calendar for 2k21 batch and Existing Batches of University Main Campus/ Constituents/ Affiliated colleges of MRSPTU.

Academic Calendar for 2k21 batch and Existing Batches of University Main Campus/ Constituents/ Affiliated colleges of MRSPTU is proposed as under in consultation with CoE, MRSPTU;

Session: 2021-22 (EXISTING BATCHES)

ODD SEMESTER (UG/PG)		
S. No.	Event	Date
1.	Start of Semester (Registration of students)	6 th September, 2021 onwards
2.	1 st Mid Semester Test	27 th - 30 th October, 2021
3.	2 nd Mid Semester Test	15 th - 18 th December, 2021
4.	Classes up to	24 th December 2021
5.	End Semester Examinations	27 th December, 2021 onwards
6.	Practical Examinations	Immediately after the end of regular Theory Examinations

EVEN SEMESTER (UG/PG)		
S. No.	Event	Date
1.	Start of Semester (Registration of students)	7 th February, 2022 onwards
2.	1 st Mid Semester Test	30 th March - 2 nd April, 2022
3.	2 nd Mid Semester Test	18 th - 21 st May, 2022
4.	Classes up to	27 th May, 2022
5.	End Semester Examinations	1 st June, 2022 onwards
6.	Practical Examinations	Immediately after the end of regular Theory Examinations
7.	Start of Academic Year 2022-23	16th August, 2022 (Tentative)

2K21 BATCH (Including LEET students) - (New Admissions)

ODD SEMESTER (UG/PG)		
S. No.	Event	Date
1.	Start of Semester (Registration of students) and start of Induction Programme	20 th September, 2021 onwards
2.	1 st Mid Semester Test	1 st - 6 th December, 2021
3.	2 nd Mid Semester Test	20 th - 25 th January, 2022
4.	Classes up to	28 th January, 2022
5.	End Semester Examinations	1 st February, 2022 onwards
6.	Practical Examinations	Immediately after the end of regular Theory Examinations

EVEN SEMESTER (UG/PG)		
S. No.	Event	Date
1.	Start of Semester (Registration of students)	1 st March, 2022 onwards
2.	1 st Mid Semester Test	21 st - 25 th April, 2022
3.	2 nd Mid Semester Test	8 th - 11 th June, 2022
4.	Classes up to	17 th June, 2022
5.	End Semester Examinations	21 st June, 2022 onwards

ਮਹਾਰਾਜਾ ਰਣਜੀਤ ਸਿੰਘ ਪੰਜਾਬ ਟੈਕਨੀਕਲ ਯੂਨੀਵਰਸਿਟੀ ਬਠਿੰਡਾ।


6.	Practical Examinations	Immediately after the end of regular Theory Examinations
7.	Start of Academic Year 2022-23	5 th September, 2022 (Tentative)

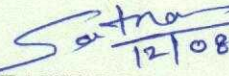
Note:


1. Changes, if any, due to prevailing COVID-19 situation shall be notified separately.
2. All the Institutes must ensure 90 teaching days. To ensure 90 teaching days, classes should be held on Saturdays also, if needed.
3. The Departments/Institutions may start Academic Session in offline mode. However, keeping in view the COVID-19 pandemic the classes may be conducted in online/offline/blended mode following necessary protocols/guidelines/ directions/advisories issued by the Central/State Governments and competent authorities from time to time.

Submitted for approval to notify the same on the University website.

Diary Receipt No. 405.
 Date 12/8/2021.
 Dean Academic Affairs,
 MRSSTU, Bathinda


 2/8/21
Clerk Cum DEO
 (Prepared by)


 12/08/2021
ASSISTANT DEAN

for approval + proceed pl.

DEAN ACADEMIC AFFAIRS


VICE CHANCELLOR


 12/8/21





ਮਹਾਰਾਜਾ ਰਣਜੀਤ ਸਿੰਘ ਪੰਜਾਬ ਤਕਨੀਕੀ ਯੂਨੀਵਰਸਿਟੀ, ਬਠਿੰਡਾ
ਡੱਬਵਾਲੀ ਰੋਡ, ਬਠਿੰਡਾ - 151001
Maharaja Ranjit Singh Punjab Technical University
DABWALI ROAD, BATHINDA-151001

[A State University Estb. by Govt. of Punjab Act No. 5(2015) u/s 2(f) & Approved u/s 12B of UGC Act, 1956]

ਡੀਨ (ਅਕਾਦਮਿਕ ਮਾਮਲੇ)

DEAN (Academic Affairs)

Ref. No.: DAA/MRSPTU/Notifications/ 113

Date: 12.08.2021

ACADEMIC CALENDAR

Session: 2021-22

2K21 BATCH (Including LEET students)- (New Admissions)

ODD SEMESTER (UG/PG)

S. No.	Event	Date
1.	Start of Semester (Registration of students) and start of Induction Programme	20 th September, 2021 onwards
2.	1 st Mid Semester Test	1 st - 6 th December, 2021
3.	2 nd Mid Semester Test	20 th - 25 th January, 2022
4.	Classes up to	28 th January, 2022
5.	End Semester Examinations	1 st February, 2022 onwards
6.	Practical Examinations	Immediately after the end of regular Theory Examinations

EVEN SEMESTER (UG/PG)

S. No.	Event	Date
1.	Start of Semester (Registration of students)	1 st March, 2022 onwards
2.	1 st Mid Semester Test	21 st - 25 th April, 2022
3.	2 nd Mid Semester Test	8 th - 11 th June, 2022
4.	Classes up to	17 th June, 2022
5.	End Semester Examinations	21 st June, 2022 onwards
6.	Practical Examinations	Immediately after the end of regular Theory Examinations
7.	Start of Academic Year 2022-23	5th September, 2022 (Tentative)

Note:

1. Changes, if any, due to prevailing COVID-19 situation shall be notified separately.
2. All the Institutes must ensure 90 teaching days. To ensure 90 teaching days, classes should be held on Saturdays also, if needed.
3. The Departments/Institutions may start Academic Session in offline mode. However, keeping in view the COVID-19 pandemic the classes may be conducted in online/offline/blended mode following necessary protocols/ guidelines/ directions/advisories issued by the Central/State Governments and competent authorities from time to time.

This has the approval of competent authority vide no. VC/316 dated 12.08.2021


Dean Academic Affairs
(Dr. Savina Bansal)

Copy to:

1. PA to Vice Chancellor, MRSPTU, Bathinda for information to the Vice Chancellor please.
2. Registrar, MRSPTU, Bathinda
3. COE, MRSPTU, Bathinda / Chairman Admission Cell 2021-22
4. Director ITES, MRSPTU, Bathinda for uploading this on University website.
5. Heads/Principal/Directors of Main Campus/Constituents/PITs/Affiliated colleges of MRSPTU, Bathinda through E-mail



ਮਹਾਰਾਜਾ ਰਣਜੀਤ ਸਿੰਘ ਪੰਜਾਬ ਤਕਨੀਕੀ ਯੂਨੀਵਰਸਿਟੀ, ਬਠਿੰਡਾ
ਡੱਬਵਾਲੀ ਰੋਡ, ਬਠਿੰਡਾ - 151001
Maharaja Ranjit Singh Punjab Technical University
DABWALI ROAD, BATHINDA-151001

[A State University Estb. by Govt. of Punjab Act No. 5(2015) u/s 2(f) & Approved u/s 12B of UGC Act, 1956]

ਡੀਨ (ਅਕਾਦਮਿਕ ਮਾਮਲੇ)

DEAN (Academic Affairs)

Ref. No.: DAA/MRSPTU/Notifications/ 114

Date: 12-08-2021

ACADEMIC CALENDAR

Session: 2021-22

(EXISTING BATCHES)


ODD SEMESTER (UG/PG)		
S. No.	Event	Date
1.	Start of Semester (Registration of students)	6 th September, 2021 onwards
2.	1 st Mid Semester Test	27 th - 30 th October, 2021
3.	2 nd Mid Semester Test	15 th - 18 th December, 2021
4.	Classes up to	24 th December 2021
5.	End Semester Examinations	27 th December, 2021 onwards
6.	Practical Examinations	Immediately after the end of regular Theory Examinations

EVEN SEMESTER (UG/PG)		
S. No.	Event	Date
1.	Start of Semester (Registration of students)	7 th February, 2022 onwards
2.	1 st Mid Semester Test	30 th March - 2 nd April, 2022
3.	2 nd Mid Semester Test	18 th - 21 st May, 2022
4.	Classes up to	27 th May, 2022
5.	End Semester Examinations	1 st June, 2022 onwards
6.	Practical Examinations	Immediately after the end of regular Theory Examinations
7.	Start of Academic Year 2022-23	16th August, 2022 (Tentative)

Note:

1. Changes, if any, due to prevailing COVID-19 situation shall be notified separately.
2. All the Institutes must ensure 90 teaching days. To ensure 90 teaching days, classes should be held on Saturdays also, if needed.
3. The Departments/Institutions may start Academic Session in offline mode. However, keeping in view the COVID-19 pandemic the classes may be conducted in online/offline/blended mode following necessary protocols/ guidelines/ directions/advisories issued by the Central/State Governments and competent authorities from time to time.

This has the approval of competent authority vide no. VC/316 dated 12.08.2021.


Dean Academic Affairs
(Dr. Savina Bansal)

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1. PA to Vice Chancellor, MRSPTU, Bathinda for information to the Vice Chancellor please.
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